



**Proceedings of the  
18th European Conference on  
Research Methodology for Business  
and Management Studies  
Wits Business School  
Johannesburg, South Africa  
20-21 June 2019**



**Edited by  
Prof. Anthony Stacey**

**Proceedings of the**

**18th European Conference on  
Research Methodology for Business and  
Management Studies  
ECRM 2019**

**Hosted By  
Wits Business School  
Johannesburg, South Africa**

**20-21 June 2019**

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## Contents

Paper Title	Author(s)	Page No
<b>Preface</b>		iv
<b>Committee</b>		v
<b>Biographies</b>		vii
<b>Keynote Paper</b>		1
Reflections on Being a Successful Academic Researcher	Shaun Pather and Dan Remenyi	3
<b>Research Papers</b>		15
Deficiencies in Defended Theses in Higher Education Institutions: And so What?	Godwill Chenyuei Akwene, Egbe Martha Beyang and Asoh Derek Ajesam	17
Tales of the Unknown and Entanglement: An Early Career Researcher's Qualitative Immersive Fieldwork Experience in a Nursing-Hospital Context	Noof Aldaheri, Gustavo Guzman and Heather Stewart	25
Use of Activity Theory for Critical Data Analysis in Information Systems Research	Patricia (Trish) M Alexander	34
Students' Perceptions of Knowledge Gained from Business Research Methods Course	Mukhtar Al-Hashimi, Abdalmuttaleb M. A. Musleh Al-Sartawi, Anjum Razzaque, Sameh M. Reda Reyad and Allam Hamdan	44
Observing from our own "Cultural Window": Presenting Autoethnographic Narratives from Tourism to Music	Manuel Au-Yong-Oliveira and Eliseu Silva	51
Organization Research Using Design-oriented Research Methods: Case Study on a Holonic Based Crisis Communication Protocol	Levente-Attila Bakos and Dănuț-Dumitru Dumitrașcu	61
A Fish out of Water: A Case of Qualitative Methods for Computing	Portia Buthelezi and Shawren Singh	70
Trends in Methodologies of Published Articles: Implications for Management and Business Scholars	Chris William Callaghan	75
Problems in Cross-Cultural Collaborative Research: A Case Study Analysis	David. A. L. Coldwell	84
Student Experience of the Maximum Variation Framework for Determining Sample Size in Qualitative Research	Ben K. Daniel	92
What Constitutes a Good Qualitative Research Study? Fundamental Dimensions and Indicators of Rigour in Qualitative Research: the TACT Framework	Ben K. Daniel	101
Non-Scrum Implementation: A Methodological Approach for Small Companies	Isnaldo Francisco de Melo Jr, Gabriel Alabarse Rocha Mendes and Sheila Aleixo Gelmetti	109
Using Q methodology to test Perspectives and Attitudes: Experiences from a Study about Content Marketing	Charmaine du Plessis	119

<b>Paper Title</b>	<b>Author(s)</b>	<b>Page No</b>
Symbolic and Non-symbolic Project Evaluation Methods	Tadeusz A. Grzeszczyk	126
The Grounded Theory in 2.0 web Environment: Problems, Challenges and Needed Adjustments	Blanca Herrero de Egaña Muñoz-Cobo	134
Methodology Toolkit for Management Educators	Suzaan Hughes and Frances Scholtz	146
The Role of Augmented Reality Games in Promoting to Millennials	Jubin Jacob-John and Jean Marie Ip Soo Ching	155
Locus of Control in University Students	Alena Kajanová	160
The Utility of Visual Methods in the Research Odyssey	Shadrack Katuu	164
Validation of an Employee Motivation Measurement Instrument in a Financial Organisation	Ophillia Ledimo, Michelle De Sousa Sabbagha and Nico Martins	174
A Model to Select a Leadership Approach for a Diverse Team	L Leenen, A van Heerden, Phelela Ngcingwana, L Masole	182
Postgraduate Research Supervision Pedagogic Methods: A Critical Review for South Africa	MC Madondo	192
Converting Qualitative Data into Quantitative Survey Instruments: A Detailed Guide	Anastacia Mamabolo and Kerrin Myres	201
A Mixed Method Approach to Improve Employee Engagement	Nico Martins	211
Mixed Methods Research Approach and Experimental Procedure for Measuring Human Factors in Cybersecurity Using Phishing Simulations	Sten Mäses, Kristjan Kikerpill, Kaspar Jüristo and Olaf Maennel	218
Linking Business and Academic Research: A South African Case Study	Demi Melton, Greg Beyer, Lize Moldenhauer and Cindy Londt	227
Application of PLS-SEM for Small Scale Survey: An Empirical Example of SMEs	John Mendy, Mahfuzur Rahman and Shawren Singh	233
Teaching Introductory Graduate Research Methods Course: Student-Centered Approach Reflections from Practice	Ignitia Motjolo-pane	240
Metaphors Entrepreneurs use: Methodological Reflections	Kerrin Myres and Anastacia Mamabolo	248
Guidelines for Designing an Interpretive Case Study for Business and Management Doctoral Students	Rennie Naidoo	256
An Illustration of Deductive Analysis in Qualitative Research	Noel Pearse	264
Thinking through a Research Proposal: A Question Approach	Colin D Reddy	271
The Challenge of Introducing the Subject of Research and Research Methods to Business Undergraduates	Martin Rich, Ann Brown and Aneesh Banerjee	278

<b>Paper Title</b>	<b>Author(s)</b>	<b>Page No</b>
Incremental Development of Business Process Architecture using the Design Science Research Methodology	Mohammad Omar Sabri, Mohammed Odeh and Mohammed Saad	285
Academic Dishonesty: A Preliminary Researchers View	Shawren Singh and John Mendy	294
Reframing Plagiarism in Academia 4.0	Anthony Stacey	305
A Multiphase Mixed Methods Approach to Internationalisation of South African Higher Education: A Research Framework Outline	Lizl Steynberg, Jan Grundling, Bing Liu and Yuan Li	312
Leading Reflective Practice-Based Learning Trajectories in Order to Develop Organizational Improvisational Skills	Camilla Valbak-Andersen	322
Action! Methods to Develop Entrepreneurship	Thea van der Westhuizen	331
Improving Knowledge Generation in Design Science Research through Reflective Practice	J.T. Janse van Rensburg and Roelien Goede	340
The Possibility of the Third Approach to Marketing Research: Critical Realism	Yan-yu Wang	349
<b>Phd Research Papers</b>		359
Measuring the Perception of Knowledge Gained from Business Research Method Course	Aminaa Buallay and Allam Hamdan	361
The Role of HRM as an Enabler of Creativity: Initial Research Findings	Anastasia Kulichyova, Sandra Moffett and Judith McKnight	370
The Use of Mobile Learning Technologies for the Professional Development of Academics at a University of Technology	Granny Setswe, Maria Madiope and Mpine Makoe	378

## Preface

These proceedings represent the work of contributors to the 18th European Conference on Research Methodology for Business and Management Studies (ECRM 2019), hosted by Wits Business School, University of Witwatersrand, Johannesburg, South Africa on 20-21 June 2019. The Conference Chair is Prof. Anthony Stacey, from Wits Business School and the Programme Chair is Prof. Louise Whittaker, from University of Pretoria.

ECRM is now a well-established event on the academic research calendar and now in its 18th year the key aim remains the opportunity for participants to share ideas and meet the people who hold them. The scope of papers will ensure an interesting two days. The subjects covered illustrate the wide range of topics that fall into this important and ever-growing area of research. This year marks the first time the European Conference on Research Methodology for Business and Management Studies has been hosted outside of Europe. We are pleased to take the conference on tour to South Africa in order to facilitate a wider and more diverse range of participants.

The opening keynote presentation is given by Prof. Dan Remenyi, who is extraordinary professor at the University of the Western Cape, on the topic of *Being a Successfully Published Academic Researcher*. The second day of the conference will open with an address by Dr Jayshina Punwasi, Clinical Manager at the Helen Joseph Hospital in Gauteng, who's talk is entitled *From Clinician to Researcher to Manager: The Practical Application of Research Methodology*.

With an initial submission of 129 abstracts, after the double blind, peer review process there are 42 Academic research papers and 3 PhD research papers published in these Conference Proceedings. These papers represent research from Australia, Bahrain, Cameroon, Canada, China, Czech Republic, Denmark, Estonia, Ireland, Netherlands, New Zealand, Poland, Portugal, Romania, South Africa, Spain, United Kingdom, United States of America and Zimbabwe.

We hope you enjoy the conference.

Anthony Stacey

Wits Business School  
South Africa  
June 2019

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## Biographies

### Conference and Programme Chairs



**Professor Anthony Stacey** has worked with Wits Business School since 1993, first fulfilling a role as part-time lecturer and external examiner until he was appointed to a full-time position in 2002. His research interests include multivariate analytical methods, group decision-making, analysis of group dynamics, forecasting using quantitative and qualitative methods and business modelling. His PhD thesis developed a new theory that enriched understanding of the interaction and outcomes of small groups. Anthony spent much of his working career at Anglo American, starting out as a software development engineer at their electronics laboratory in Johannesburg and going on to hold various management positions including laboratory management, business development, and finance and administration. He also has extensive consulting experience in the fields of business data analysis and forecasting, marketing research, Monte Carlo simulation, business strategy and technology implementation.

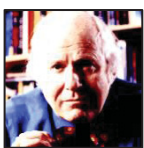


**Professor Louise Whittaker** is an expert on strategy, governance and ethics, particularly in relation to organisations and information systems. Governance cannot be meaningful without ethics, and both are essential to successful strategies and projects. She also has extensive experience and interest in qualitative and phenomenological research. She has supervised eight completed PhDs and over 100 MBA research reports, many of them in these areas, as well as conducting her own published research and strategic consultancy work. She is a senior editor for the Information Systems Journal, a major international journal. As the Executive Director of Academic Programmes at the Gordon Institute of Business Science (GIBS), University of Pretoria, she manages a multi-disciplinary team in the delivery of an academic programme comprising multiple postgraduate degrees and diplomas, delivered to hundreds of students in an internationally-accredited academic institution. She has extensive experience with curriculum design and international accreditation processes for business schools. Her specialties are information systems strategy, governance, ethics and organisational effects; research supervision; qualitative research; phenomenology and applied ethics.

### Keynote Speakers



**Dr Jayshina Punwasi** MBChB (UCT), MBA (WBS) is a Clinical Manager at the Helen Joseph Hospital in Gauteng. Having been in clinical practice for some years she realised that there was a significant gap in the South African healthcare system in terms of qualified managers and thus she pursued an MBA at Wits Business School. Subsequent to this she worked for a Tier 1 international management consulting firm in their healthcare, finance and Africa business divisions before taking up her current position with the Gauteng Department Health in South Africa. In addition to her highly challenging role, she is currently studying towards a Masters Degree in Public Health.



**Dr Dan Remenyi** is an extraordinary professor at the University of the Western Cape and is specialised in research methodology and new technology. Dan teaches Research Methodology and Sociology of Research as well as supervising academic researchers. He has examined both masters and doctoral degrees in a number of universities in several countries. Dan has authored more than 30 books and some 50 academically refereed papers. He holds a B Soc Sc, an MBA and PhD.

### Mini Track Chairs



**Professor Noel Pearse** is the Research Co-ordinator at the Rhodes Business School in South Africa. He lectures in Leadership, People Management, Strategy Implementation, Change Management and Research Design. His current research interest is in the application of qualitative research methods to analysing leadership and leadership development processes.



**Dr Shawren Singh** is a senior lecturer in the School of Computing at the University of South Africa, and has spent more than 16 years teaching and researching in the Information Systems space. His research has focused on digital scholarship and he has presented papers at several international conferences. He is currently supervising several post graduate candidates.

## Biographies of Contributing Authors

**Noof Aldaheri** is a Lecturer of MIS Business at Taif University, Saudi Arabia and a Ph.D. candidate at Griffith University, Australia. Her Doctorate's research focuses on exploration of cross-cultural knowledge sharing practices. Her main research interests are: cross-cultural management, expatriate management and HRM, knowledge management, organizational learning and workforce diversity.

**Trish Alexander** is a Professor Emeritus (School of IT, University of Pretoria), a Professor Extraordinarius (School of Computing, University of South Africa) and is currently in the Faculty of ICT at the Tshwane University of Technology. She prefers interpretivist research and social theory (e.g. Actor Network Theory and Activity Theory). For the latter part of her teaching career Trish has focussed on supervising senior post-graduate students.

**Mukhtar Al-Hashimi**, Prof, Bahraini national with 4 degrees from prestigious American higher education institutions. Started academic career as Assistant Professor while medical informatics advisor for Bahrain Ministry of Defense medical services. Developed nationally recognized medical Information System for Bahraini Defense force's medical services. Publications and interests pertain to Information Systems Development, Design, and Implementation. Currently, Vice President, Academic Affairs of Ahlia University, Bahrain.

**Abdalmuttaleb M.A. Musleh Al-Sartawi** Chairperson of accounting and economics department, Editor-in-Chief of the *International Journal of Electronic Banking (IJEBank)*. He received his PhD in Accounting, from UBFS. He has chaired as well as served as a member in various editorial boards and technical committees in international refereed journals and conferences.

**Manuel Au-Yong-Oliveira** has a PhD in Industrial Engineering and Management from FEUP (University of Porto). Manuel is an Assistant Professor at the University of Aveiro, and a researcher affiliated to GOVCOPP. At present, Manuel is the Director of the Master's degree in Management at the University of Aveiro, in Portugal. Manuel is also a member of the Executive Committee of his department - DEGEIT - University of Aveiro. Manuel has close to 200 academic publications.

**Levente Bakos**, is a PhD student in Management at Lucian Blaga University of Sibiu and teacher at the Hungarian Sapientia University from Transylvania, Romania. He is mechanical engineer and economist, with scholar and practitioner experience in industrial management and public administration. His research interests are: Holonic Manufacturing Systems, Risk Management, CSR, Public Relations in economy.

**Amina Buallay** is Head of Administration and Financial Services in the Ministry of Education, Bahrain. Currently, she is a PhD scholar at Brunel University, London. She holds a Master's degree in Business Administration from Ahlia University, and a Post Graduate Diploma in Business Education and Bachelor's degree in Accounting from University of Bahrain. She conducts research in the area of Intellectual Capital, Corporate Governance, and Sustainability Reporting.

**Portia Buthelezi** is a Senior Lecturer at the University of South Africa. College of Science Engineering and Technology in the School of Computing-Computer Science Department. Her research interests are in the field of research methods, mobile bullying, information security, focusing on user interactions and awareness of the security aspects within the information systems that they use (Cyber security awareness).

**Chris William Callaghan** is a Professor of Management in the School of Economic and Business Sciences of the University of the Witwatersrand, Johannesburg, South Africa. He is founding director of the Knowledge and Information Economics/Human Resources Research Agency (KIEHRA).

**D. A. L Coldwell**, Professor B.Sc. (Soc) London, B.A. (Econ), M.A., D. Litt et Phil, FCIPD, FRSA is a Professor of Management at the School of Economic and Management Sciences, University of the Witwatersrand. A National Research Foundation (NRF) accredited researcher, he has produced books and written articles in premier national and international journals.

**Ben Kei Daniel**, PhD, is Associate Professor in Higher Education at the University of Otago, New Zealand and the convener for Educational Technology for the university. His current research is situated in the area of Artificial Intelligence in Education (AIED). Also, he is investigating theories and praxis of teaching research methodologies for Business and Academia.

**Charmaine du Plessis** is an Associate Professor in the Department of Communication Science at Unisa. She currently supervises several Phd students who use Q methodology and specialises in brand communication with a focus on content marketing.

**Tadeusz A. Grzeszczyk** is an associate professor in Faculty of Management at Warsaw University of Technology. Conducts scientific and didactic activity regarding project management and evaluation (120 scientific publications in management, economics and social sciences). His interests and research work also include the use of AI methods in project evaluation systems and decision support in management.

**Blanca Herrero de Egaña** holds a Phd. in Social Anthropology (2018). Her Phd. thesis "La innovación social en España: ejes vertebradores desde la Teoría Fundamentada" and her more than 25 years of professional experience in integral, sustainable and human development, makes her a reference in social innovation in Spain.

**Isnaldo Francisco de Melo Junior** is a software developer and is currently pursuing a Master degree at Polytechnique Montreal, QC. He did his Bachelor at Universidade Mackenzie in Sao Paulo, Brazil and has been working in the IT field since 2009. He also has been working with education in NGOs and private schools.

**Suzaan Hughes** is a lecturer in the College of Business and Economics, at the University of Johannesburg. She has a keen interest in leveraging technology to enhance student learning and engagement. Her main research areas are management education, strategic management and business management.

**Bayo Ijagbemi** is an Associate Professor in Africana Studies at the University of Arizona, Tucson, USA. His academic background in history, ethnography, development studies, and anthropology enable him to research a range of topics that bridge culture and development globally. He has been conducting research in Southern Africa (mostly Botswana) since 2001.

**Jubin Jacob John** is a PhD student at the Latrobe Business School. Jubin is an SAP-certified professional currently researching in marketing and management. He has published in studies in various journals, and his research interests are in Augmented Reality, Blended Learning, Sustainability, and Supply Chain Management.

**Juanita Tertia Janse van Rensburg** is a lecturer in the School of Computer Science and Information Systems at the North-West University, Vanderbijlpark Campus, South Africa. Her research areas of interest are human-computer interaction, design science research, reflective practice and project-based learning.

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# Keynote Paper





# Reflections on Being a Successful Academic Researcher

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**Abstract:** Research is central to the life of the career academic. However, the framework in which academic research is conducted is not generally well understood and neither is it often articulated or discussed. The literature tends to rather focus on issues in relation to specific research methodologies and the evaluation thereof. Additionally, previous research argues that it is common for university academics to have little or no formal preparation for their role as teachers. This paper posits that the same applies to that of the academic's role as a researcher. It cannot be assumed that the mere obtaining of a Doctoral degree, prepares the novice academic for a research career. Early career academics are expected to acquire an understanding of how to survive as a researcher through a process more related to osmosis than to the principles of academic discourse. This paper commences with an overview of the origins of the academic career and the doctoral degree. Thereafter, it introspects the requirements to be a successful academic researcher. Aspects of the academic researcher's agency in relation to personal values, characteristics, integrity, research uptake skills, as well as the benefits and challenges of a research career are explored. By unpacking the salient elements of what is required to be a successful academic researcher, this paper provides a basis for those who are considering a career in academe to make an assessment if such a pursuit is feasible. In addition, the paper provides a yardstick by which early or even mid-career academic researchers may judge their progress towards being a successful researcher, thereby identifying areas for improvement.

**Keywords:** Researcher, PhD, Academic, Career, Success, Challenges, Research uptake, Research quality

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## 1. Introduction: Background and Context

In the current era the importance of research in the life of an academic is paramount. Several studies have been conducted over the years into the issues related to the academic research function, its pitfalls and its challenges (Drennan, 2001; McAlpine and Amundsen, 2015; Browning, Thompson and Dawson, 2017).

Moreover, expectations around success in academia vary, and early career academics often receive conflicting messages about what they should concentrate on to achieve promotion or tenure (Sutherland, 2017).

In order to contextualise the research function of the academic we briefly reflect on the historical perspective of how the university system evolved, and that of the emergence of the doctoral research degree. This provides the backdrop to the underlying problem of the tension inherent in the life of the average academic, in which a balance must be found between being a successful researcher and that of other prerogatives of the academic career.

### 1.1 A brief history of the University System and the Evolvement of the Research Degree

It is interesting that universities in the Western world generally trace their ancestry back to the University of Bologna in 1088. After Bologna, the first university to be established by a definite act was the Castilian University of Palencia, founded by Alfonso VIII of Castile in 1208-9 (Cobban, 1988). This University and the others established in the ensuing 300 years were centres of scholarship where the emphasis was on the preparation of individuals for the professions. At that time the main professions which were being addressed related to the church i.e. theology, the law, medicine, teaching and science.

As well as being centres of teaching and learning there were of course some research activities. Great names like Galileo Galilei and Isaac Newton were based at distinguished universities in Italy and England. However, the emphasis of university activities was not on research for the creation of new knowledge per se. The universities were centres of scholarship which, in former times, meant learning and reflecting on what was already known. In these early days there was a struggle to disconnect knowledge from the notion that it was a direct gift from "The Almighty". Galileo famously announced that the Judaeo-Christian scriptures informed

human kind “How to go to heaven, rather than how the heaven go!” (Gingerich, 1982: 134). The research mentality which is common today was yet to be incarnated into the university system which was still quite some hundreds of years away from the concept of research being central to the academic project.

It was only in the 19th century, with the thirst for new technology in the industrial revolution, that the research degree was invented. The PhD was created in Germany but soon spread to the United States of America and not long after that to the United Kingdom and then to other countries (Bourner, Bowden and Laing, 2001). Originally the PhD was seen primarily as a licence to teach and as such was as much about scholarship as research. However, eventually the emphasis was transferred to original research, distinctly based within a framework of scholarship. For six centuries, professional doctorates in theology, law and medicine were pre-eminent. By contrast, the modern Doctor of Philosophy, the PhD (or DPhil), originated in Berlin University in the early part of the nineteenth century after which it then spread across the German universities, attracting students from many other countries, notably the USA (Bourner, Bowden and Laing, 2001). The PhD has since become the gateway degree into the academic profession. As such, one of the key processes linked to the emergence of the knowledge economy as we know it today is the shift in the purpose of the Ph.D. from being a licence to teach in academic institutions to being an important strategic resource for a country's economic development (Herman, 2012:1).

### **1.2 The centralisation of research in academe**

It is important to note that, although originally focused on teaching, the academic profession, by the late nineteenth and early twentieth centuries, had evolved into a dual one (in Germany much earlier than in the United States and the UK) comprising both teaching and research (Kreber, 2010). It is also worth mentioning that although the origin of papers published in scientific journals can be traced back to at least the Royal Society in 1665 (Atkinson, 1988) they were not a major feature of university activity until a number of centuries later. It has really only been since the second half of the 20th century that there has been compunction on academics to be involved in research. As a consequence the review process rose to the fore (Spier, 2002) and academics were compelled to have the findings of their research projects published in double-blind peer reviewed journals. But even then it cannot be argued that the pressure was significant and many academics enjoyed highly satisfactory careers with very few publications to their name.

By the beginning of the 21st century the attitude of the Academy began to change and the requirement to publish had become a central issue for all academics. Today the pressure has significantly increased and many academics complain that research is now seen by far too many academic administrators as being more important than teaching (Rawat and Meena, 2014). This has come about because of the need to seek new paradigms for university funding (Weiler, 2000). Many universities are therefore often directly affected by the quantity and the quality of their research output. The pressure is now so great on the quantity of publishing (De Rond and Miller, 2005) that some have argued that this has resulted in a deterioration of attention to the quality of research being produced (Sarewitz, 2016). However, this point is at present highly contentious and there is concern that much of current research does deliver the type of value which it should.

Of course, where this research focus has been placed at the expense of attention to teaching (Drennan, 2001) and that of other student needs does not bode well for the University. At the end of the day universities have to remain centres whereby knowledge is disseminated and individual students are guided towards successful careers. Without this type of function universities will have lost their way and simply become sterile institutions.

### **1.3 The tension between research and other elements of the academic project**

Given this brief background of the origins of universities, and the centralisation of research within the academic project, a career in academic research does not suit everyone. The initial years as an early career academic are challenging times as those new to the academy attempt to balance the three aspects of their role in terms of teaching, research and service, while also coming to terms with both overt and hidden expectations (McKay and Monk, 2017). However, for those who enjoy the challenge it can be a rewarding way to spend one's working life. It has to be appreciated that the substance of academic work is arduous (see for example McCormick and Barnes, 2008; Chen and Anderson, 2008), and that the researcher role has become more demanding (Kyvic, 2013). The new academic is faced with multiple, and sometimes competing, demands and expectations, which include learning the culture of the new academic institution; understanding the processes and policies for academic performance review; establishing meaningful and constructive mentoring

relationships; creating a sustainable research agenda; and fostering the writing attitudes and strategies that promote turning research projects into publications (McCormick and Barnes, 2008).

It is known that there are varying levels of support to the academic researcher. In some instances academics are overloaded with teaching duties (Porter and Umbach, 2001) and therefore find it difficult to initiate and sustain the research component of their career. Furthermore the environment in which academic work is conducted has become increasingly competitive, especially with regards to funding. Much work goes into research projects which are never completed and as for research degrees there is a stunningly high rate of non-completion (Bourke et al., 2004; McCormack, 2005).

#### **1.4 Objective of this paper**

Previous research, e.g. Kane, Sandretto and Heath (2002), argues that it is common for university academics to have little or no formal preparation for their role as teachers. We argue that the same applies to that of the academic's role as a researcher. We cannot assume that the mere obtaining of a Doctoral degree, prepares the novice academic for a research career. There are several other important issues, which this paper focuses on, that become paramount for success.

This brings to the fore the core purpose of this paper, viz. an introspection of requirements to be a successful academic researcher. By unpacking the salient elements of what is required to be a successful academic researcher, this paper provides a basis for those who are considering a career in academe to make an assessment if such a pursuit is feasible. In addition, the paper provides a yardstick by which early or even mid-career academic researchers may judge their progress towards being a successful researcher, thereby identifying areas for improvement. In summary, this paper addresses the traits of an academic researcher which are relevant to acquire a university post, retain it and even gain promotion.

## **2. The implication of the research function in the academic career: Beyond just research skills**

Success is a social construct such that no person's character, behaviours, actions, or qualities are inherently successful in and of themselves but rather, success is a label given to various actions (or the outputs of the actions) by others and/or by the person him- or herself (Sutherland, 2017). It is sometimes suggested that success as an academic researcher amounts to little more than having a command of research methodology and finding a suitable research question. Although these two conditions are indeed necessary for success there are many more issues involved which all academic researchers need to be aware of and be able to confidently work with. This is further complicated by the fact that the occupational context of academics is characterised by increasingly complex relationships between teaching, research and administration (Kreber, 2010). This complexity is highlighted by Chen and Anderson (2008:65) who provide a telling account of the life of an academic:

*Being a professor, it turns out, is no easy task. Barely had I moved into a rented house in a different city when I learned that I was expected to write a major grant proposal detailing an extensive research plan for the next 3 years. Soon I learned about the endless demands of an academic position. Between research, writing, classes, supervision, meetings, and committees, I never seemed to have a break. The situation was exacerbated when my son was born in pre-tenure year 3. Now I am also seriously sleep deprived. On top of all this craziness, I carry a doubt deep inside: Am I ready to be "the Professor"?* (Chen and Anderson, 2008:65)

It is probably true to say that each academic who undertakes research will bring his or her own mindset, own skills and own aspirations to the tasks which are necessary to navigate the complexity of academic life, and become successful in this endeavour. However, at the same time it is also possible to identify values, characteristics and approaches to this type of work which will facilitate the achievement of success.

### **2.1 Personal values which motivate excellence in academic research**

In order to address the personal characteristics which are necessary for success in this field of endeavour it is worthwhile to discuss the types of values which academic researchers aspire to. In this instance values are defined as being deeply held beliefs which directly influence the thinking and the behaviour of the individual who possesses them. Beliefs refer to a person's subjective probability judgements concerning some

discriminable aspect of his world; they deal with the person's understanding of himself and his environment (Fishbein and Ajzen, 1975: 131).

Everyone's thinking and behaviour can be understood as a result of values, of which there is a fairly wide range that lend themselves to the realm of academic research. We suggest the following principal values are involved in motivating excellence in academic research:

- The centrality of knowledge: The view that knowledge is an important dimension in developing and individual's capacity to live a full, useful and enjoyable life. For this reason, knowledge is important to both the individual and to the society in which he or she lives;
- Contextual relevance of research output: Knowledge is always contextual and that, what could be seen as knowledge in one society or by one group of individuals, could be seen as of no value by others;
- Understanding the impact of research: Although knowledge may have value in its own right without any consideration of what can be achieved with it, the application of knowledge in order to improve the conditions of life of individuals or societies is a highly important consideration;
- An appreciation of the extant literature: Respect for what has already been known is an important issue although at the same time it is essential to realise more recent understandings can make what was formerly regarded as completely certain to have been mistaken;
- Academic integrity: Respect for the time and effort required to research and the fair acknowledgment of the work of others. This issue is sometimes understood as being part of the greater issue of academic integrity;
- Dissemination of research: Knowledge should be shared both at an individual level and at the level of the scholarly community. Therefore the publishing of research findings is critical. Dissemination of research findings in a non-academic context is equally important to ensure improvements in the everyday world of industry and society at large;
- Being a sympathetic gatekeeper: Researchers should be prepared to help anyone who wishes to join the community of researchers and genuinely pursue the development of further knowledge. This is applicable to the role of the researcher as a doctoral supervisor, and that of a journal peer-reviewer.

We argue that the seven values described above provide a foundation of the academic persona, which is a necessary pre-requisite for successful research.

## **2.2 Personal characteristics which underpin research success**

With the seven personal values in mind it is now useful to consider the issue of which personal characteristics might be most valuable for anyone who wishes to pursue a career as an academic researcher. Personal characteristics have been found to be related to job satisfaction (Koustellos, 2001) and are described as antecedents to work commitment (Bashaw and Grant, 1994). We have identified several characteristics of the researcher, which are set out below:

- The essence of being curious: A high level of curiosity is essential for the academic researcher and this curiosity needs to be focused primarily on issues to do with how the world operates and why it does so. Other questions of who, when and where can also be important but in the academic environment how and why questions are often paramount;
- Being a life-long learner: Being prepared, if not delighted, to learn and also to unlearn is a requirement. The academic researcher is on a constant learning curve and understanding that there is never a point in time of "knowing it all" implies constantly being humble about your perceived level of expertness. As research is intrinsically a social activity it is important that researchers be interested in the works of colleagues even when it is not directly relevant to one's own research;
- An awareness of the multi-dimensional nature of research problems: First and foremost, it is necessary for the researcher to be aware of the vastness and/or complexity of the world in which he or she works. The world exists in terms of concepts and artefacts and these are in general multidimensional and require some considerable focus in order to appreciate the premise of the average research problem.
- Being measured in passing judgement: Not rushing to judgement but being careful to reserve one's opinion until one has a full command of all the possibilities of the situation being studied. Many of the challenges faced by academic researchers are complex and require an ability to work with "messy"

situations and make decisions in the face of either not enough or even too much information. Being sceptical of explanations which are not grounded appropriately is critical;

- Withstanding criticism: The capacity to be able to take criticism, even sometimes very hard criticism is an important attribute if one is to succeed in the research endeavour. In addition, an academic should be able to constructively critique the work of others without causing offence;
- Understanding that good research takes time: Being prepared to commit to a long-term project from which no benefit will be seen for 1, 2, 3 or even more years is essential. Even relatively small projects can run for a number of years before they are finally finished;
- Developing resilience: Possessing the capacity to work in an environment where there is a high uncertainty as to the degree of success which can be achieved is an important characteristic. In some fields an experiment may extend over a substantial period of time, after which it is found that the original hypotheses were invalid;
- Resisting a lone-ranger syndrome: Being able to collaborate with others makes academic research both more enjoyable and generally more effective. In many instances evidence of collaboration with peers, both regionally and internationally is viewed positively when being evaluated for tenure or promotion;
- Self-confidence: Having confidence in one's own capabilities and being able to defend one's own achievements is essential. A confident mind set leads to a positive attitude to the research activity, however daunting it may appear, and consequently instils a drive for success;
- Command of writing: Having an interest in language and thus having a thorough command of academic writing in which the research findings will be presented. This is a difficult matter especially for academic researchers who have to publish in a language that is not a first language. Help may be sought with regards to proofreading but it is a contentious matter as to whether the editing of research findings should be permitted. Such editing can unfortunately change the intentions and meaning of the researcher.

The values and characteristics described in this section lend themselves to the development of agency (Barker, 2003) of the academic researcher. This provides a foundation for the pursuit of the actual work of research.

### **3. The work of academic research**

Åkerlind (2008: 25-26) identified four "qualitatively different ways of understanding being a university Researcher", which included

- fulfilling academic requirements, with research experienced as an academic duty;
- establishing oneself in the field, with research experienced as a personal achievement;
- developing oneself personally, with research experienced as a route to personal understanding;
- enabling broader change, with research experienced as an impetus for change to benefit a larger community.

Kyvik (2013) suggests that there are six tasks related to the academic researcher role viz. networking; collaboration; managing research; doing research; publishing research; and evaluation of research.

The foregoing indicates that the work of the academic researcher is quite broad, and therefore requires a sense of deep commitment and resilience to do justice to all of the above. We argue that the academic will need to assume the values and characteristics, described in the foregoing sections, which in turn leads to a pattern of work in the pursuit of excellence in academic research.

However, before commencing with the research activity, it is important to state that the actual work involved in any research project will depend on a considerable number of specific factors. These include, inter-alia, the topic being researched, the research question, the culture in which the research is taking place, the funders of the research, and the expectations of what is to be achieved as a result of the research.

With all of these contextual issues in mind there are still a number of generalisations which can be made. The list of work that we present should not be interpreted as representing a timeline as frequently work needs to be done simultaneously, with the researcher deftly multi-tasking on more than one task at a time.

A pre-requisite to research, and often one of feasibility, relates to funding. Goldfarb (2008) suggests that academic careers may be a function of the type of funding received. As academic research can sometimes be costly it is important for the researcher to ensure that adequate funding is available in order to see the project through to an appropriate conclusion. In order to do this, it is important that the prospective researcher be realistic concerning costs of equipment and/or cost of accessing appropriate data. In some lines of research data acquisition has become either difficult or expensive or both and this should be understood and provision for this should be made early in the project.

The development of appropriate research questions have been described previously e.g. Agee (2009), Lipowski (2008). The researcher begins by carefully defining a suitable research question which is of intellectual interest as well as having some potential value in other aspects of the society. The research question will ideally have some relationship to matters which the academic community will have already been aware. In certain fields of study there is greater emphasis on the research question being derived from some sort of already known intellectual conundrum whereas in other topics the research question can be more original and thus primarily be of a practical nature.

Of fundamental importance is the review of the contemporary academic literature on the subject to be studied (Bolderston, 2008; Pan, 2016). The purpose of this is to establish what has already been known and also to obtain insights into how aspects of this study or similar studies have previously been researched. This gives the researcher some inkling of the types of research designs and methods which have already been found to be effective in this area of study. The literature review is a sine qua non for the acceptance of any academic research findings. To achieve the quality of literature review required it is essential that the academic researcher develop a high level of skill at reflection and expressing his or her thoughts in writing.

It is essential that if an empirical study is to be pursued the researcher does not take any information which has been presented either in the literature or in the collected evidence on face value. Any research finding should immediately be qualified with the question, "What is the evidence for that assertion?" For this reason a grasp of fundamental research rigour, such as the technique of triangulation is essential.

Because every academic researcher will have his or her own personal perspective, a guiding principle which is most effective in conducting sound academic research, is for the researcher to continually ask how else could the data or evidence at his or her disposal be interpreted by others? The purpose of this is to minimise the bias which will inevitably be present due to the quintessential subjective nature of all personal perspectives.

Much has been written over the years from a project management perspective in respect of scope creep e.g. Khan (2006) and Thakurta (2013). An important issue for the researcher to therefore consider is whether the scope of the work that is being embarked on is realistic. Academic researchers sometimes take on projects which are too big, either in scope or the depth is too much to be addressed for the purposes of a degree or a peer-reviewed academic paper. In this respect project management skills are helpful.

The epistemic imperative in the research endeavour implies that we can only produce, at a single point in time, the best approximation to the truth, rather than a claim that we are producing an absolute truth. The academic researcher is not in a position to look for proof of any theory concept or assertion. Academic researchers are in the business of finding the best possible explanation for phenomena given the current state of their knowledge of the world. This means that academic research effectively only delivers suggested theories or explanations and knowledge which may at some future time be shown to be incomplete or in some other way no longer valid.

Academic research is highly regulated in a number of ways, one of which is through the necessity to obtain relevant permissions from authorities who govern the conduct of ethical research. How this works in practice varies from one University to another but in all instances there are a number of universal principles which are applied. The first of these is that whatever research is undertaken the highest care must be exercised that no harm of any sort should come to anyone involved in the project. This applies both to informants who may be supplying data or evidence, any participant in an experiment as well as the researcher him or herself. The second major issue which is of concern is that no activity of the researcher should in any way bring the good name of the University into disrepute. It is essential that the ethics rules of the University be carefully complied with.

Academic researchers who are prepared to be helpful to colleagues and students are often rewarded in a number of different ways. There is, among academics, an unspoken law of reciprocity and a general feeling that it behoves academics to be collegiate. Therefore, if a researcher is prepared to extend the courtesy of assistance, this should be returned on other occasions that may arise.

Lastly, as was pointed out in the list of characteristics of a successful researcher, research is essentially a social activity which involves people collaborating at a number of different levels. To be highly successful as an academic researcher it is important to develop appropriate social skills which will allow the community of researchers to extend a range of courtesies. This becomes increasingly important as the researcher advances in his or her field of study.

#### **4. Academic integrity**

Confidence in scientific progress provides the basis for the public support of research and as such the professional integrity of scientists is important to society (Korenman, et al., 1998). It has been suggested that “perverse incentives and hypercompetition are altering academic behaviour of researchers and universities, reducing scientific progress and increasing unethical actions” (Edwards and Roy, 2017, p. 51). An issue which therefore needs to be addressed in connection with long term academic success is that of academic integrity.

This concept is difficult to define and is often discussed in terms of how integrity has been violated. A comprehensive definition of integrity is problematic as it has so many dimensions, but at its core is the notion of honesty and the ability to face up to situations where individuals or institutions do not behave in the way that they should. Besides honesty, integrity involves fairness, respect and responsibility. As a lecturer an academic is continually being faced with concerns which are directly affected by fairness, respect and responsibility as these issues are of paramount importance in the relationship between teacher and student. All these issues also apply to academic researchers.

In the research environment the situation is even more complex in that the academic researcher has also to consider his or her relationships with informants, sponsors, co-researchers, publishers to mention only some of the stakeholders involved. All the different stakeholders will have individual expectations concerning the behaviour of the researcher and what can be achieved by the research project and sometimes these can be complex and even contradictory and it behoves the researcher to be able to pay these situations adequate attention and where there is any conflict to resolve such situations.

Academe does not have a spotless record with regards to the maintenance of a high degree of integrity. There are many examples of a wide range of cheating which has occurred for as long as research has been conducted. Perhaps the most scandalous example of academic research cheating in the 20th century was that of Professor Sir Cyril Burt (Gillie, 1977), who fraudulently invented informants and collaborators or co-workers and whose alleged “research findings” were influential in moulding the United Kingdom’s government educational policy after the Second World War. What is particularly surprising about this case is that the frauds committed by this man were not exposed for more than 20 years after his death. The academic community trusted this man in a number of different ways without apparently any consideration for the inspection of the integrity of the work which he produced.

Academic integrity is under increasing pressure in the 21st-century due to the availability of material on or through the Internet and the Web. The extraordinary interconnectivity offered through the Internet is a temptation for some researchers to indulge in activities such as plagiarism. The World Wide Web with its ability to present apparently attractive solutions to academic challenges has resulted in increased unacceptable practices of which ghost writing is only one.

However, despite these transgressions and the new temptations facilitated by our current fascination with technology, it is reasonable to believe that the vast majority of researchers approach their endeavours with a high degree of concern for integrity which allows the greater community to trust academic research findings and pay close attention to the recommendations of academic researchers. Also the introduction of ethics protocols, and the procedures established by which they are acquired and granted, have reduced the possibility of research misbehaviour. This is not to say that this risk has been eliminated but that it is much less likely to occur.



## **5. Experience teaches: Towards a satisfactory research output profile**

There is an old aphorism dating back to Roman times when it was expressed *experientia docet* which translates as experience is the best teacher. This is particularly true in the academic research world. Novice academic researchers can find their first project to be extraordinarily difficult. This is especially true when it comes to writing a paper which is to be blind peer-reviewed by a quality academic journal. Solomon (2007, p. 3) argues that “peer review is generally seen as vital for the roles of forming an archive of knowledge and distributing rewards; it also plays a key role in validating the quality of research in a field but, as noted by Kumashiro, may also hamper disseminating new ideas and methods”.

Therefore peer review may be viewed both positively and negatively, and so the idea of having to satisfy two or more critical reviewers can be extremely daunting. In addition, some reviewers have been known to be unpleasantly and unnecessarily critical, sometimes even giving offence. However, after the first few papers have been written, reviewed, improved and published most academic researchers no longer find this procedure as painful as it was originally. Although there is much benefit from attending courses and from reading the literature on how to conduct and write up academic research, at the end of the day research is an art which is much better learnt through experience. In fact, it is sometimes argued that academic research is a skill which can only be learnt by working alongside an accomplished practitioner and this notion is often presented as a justification for the method of relatively intensive personal supervision which is provided to all doctoral and some masters students.

Becoming a successful academic researcher takes time. To be referred to as a successful academic researcher would normally require that a material number of papers have been published in quality journals. In today's environment many universities are looking to their faculty to be published in three star journals (some university systems use a star system to rank journals according to impact factor; in other instances a star rating does not apply, but a minimum impact factor of a journal is a requirement when publishing). However, this is often optimistic as the competition to be published in these journals is intense and even two-star journals (in some cases it may be even one-star journals) are frequently regarded as perfectly adequate. The number of papers which need to be published before an academic researcher might be considered successful will vary enormously. It is probably fair to say that by the time five or six pieces of research have been concluded and published in respectable journals an academic researcher could consider him or herself a success.

There is a question of how long it should take to achieve a satisfactory level of output and this will vary. Some universities state that their faculty should be able to achieve the publishing of two papers a year while others are much more flexible and will not declare a number on a yearly basis but will expect several well-cited papers to be published over a reasonably short period of time, for example 3 or 5 years. The main issue here is that the university expects that academic research becomes a lifelong activity and that it is not seen as simply a hurdle over which a faculty member must jump to secure a position, tenure or promotion. Academic research is now seen by the universities, by society and even by some prospective students as being a high priority activity which is in an important way one of the marks of the quality of the University itself.

## **6. Research uptake: Beyond academic dissemination of findings**

Academic researchers have been spurred by a “publish or perish” imperative. Consequently the balance of forces, from a research effort perspective, has been inequitably skewed towards the goal of publishing, with less effort toward the goal of ensuring the uptake of research output within society at large. This is reinforced by Estabrooks et al. (2008: 1067) who argue that “Traditionally, universities served as intelligence banks that were publicly funded in return for academic contributions to the betterment of science. This relationship helped sustain the traditional (ivory tower) view of the academy. It allowed self-determination of research agendas and it limited academic accountability to scientific disciplines rather than the public”. They go on to suggest that current trends indicate a renegotiation of the actual social contract between science and society, which sees society as an active partner in the creation of socially robust (as opposed to reliable) knowledge (Estabrooks et al., 2008).

A consequence of this trend is that over recent years, one of the most important changes in attitude towards academic research has been the realisation that even the most significant findings are of little value unless they are widely disseminated. Whereas in the past findings of academic research were simply reported or

published in scientific or scholarly journals the research community has realised that this was sufficient, and more emphasis is called for to deliver research findings to society.

The concept of uptake, in its strict literal sense means the act of accepting or taking up something on offer. This can be construed in various ways, including acceptance, or consumption. The Development Research Uptake in Sub-Saharan Africa (DRUSSA) programme, led by the Association of Commonwealth Universities, defines research uptake as “the processes by which knowledge generated through research finds its way to those who need it—be they practitioners (health workers, farmers, engineers, community workers) or policymakers in government and other agencies” (DRUSSA, 2012). DRUSSA draws a parallel with currently familiar terms such as ‘research communication’, ‘research dissemination’, ‘research utilisation’, and ‘research into use’ with that of research uptake.

Research uptake starts in the early stages of the research cycle, instead of a narrowly focused end-goal of dissemination. Boshoff (2012) emphasises utilisation in his description of research uptake as follows:

*“the process whereby research findings enter the domains of intended but also unintended audiences. It is a complex process as the audiences can be multiple (practitioners, policymakers, scholars, general public, etc.); the notion of ‘uptake’—which corresponds to ‘utilisation’—can assume different meanings.... and a variety of modes exist whereby research can reach user audiences....”*

The notion of “utilisation” as alluded to above, and the alignment to the “end user” communities who will incorporate “new knowledge” into their practical work is an important consideration for the academic researcher. Consequently one of the implications of research uptake for the academic researcher is that of stakeholder engagement. This calls for effective engagement with stakeholders throughout the research cycle, from problem conceptualisation to that of findings. Thus stakeholders are involved in the design of the research questions and communication about the research results are tailored to the needs of different stakeholders.

The inherent value proposition of research uptake is that the visibility of research outcomes are enhanced, which leads to a wider societal recognition of the researcher, which in turn may improve citation rate. The higher visibility of research in society and in popular media also enhances the university’s image and brand, and eventually supports the attraction of more funding.

## **7. The benefits of being an academic researcher**

There are many benefits of being an academic researcher. There is much satisfaction in discovering new knowledge. When this is communicated to the greater world through publication it can deliver a high degree of prestige to the researcher. Today this is often regarded as the principal benefit from this activity. In previous times academics would say that their career afforded them much freedom. However, with an increasing managerial approach to universities much of this freedom has been eroded.

In addition to this prestige it can be rewarding to work with novices and to be able to guide them towards a successful career. It is often said that hardly anyone can ever pay back the benefits they have received from their education. The way to acknowledge these benefits has sometimes been referred to as “paying forward” which effectively means helping others to achieve success in their own right.

Success as an academic researcher can bring substantial benefits to the University or the institution in which the researcher is employed. Government funding schemes are often based at least in part on research output. Research output also attracts commerce and industry that may commission research projects or perhaps offer opportunities to academic researchers to undertake consultancy assignments in other organisations. This can be of significant assistance to the major community of which the researcher is a part.

There are many types of career benefits which success as an academic researcher will deliver and these include obtaining an interesting job, being given tenure at certain universities, or even obtaining a promotion. Some universities are known to pay bounties to researchers when research papers are published in certain journals.

Academic research skills can be transferable to other professional environments. This can have two outcomes, one of which is to make the researcher more attractive in the job market if he or she should wish to switch employment and the other is that research skills can be offered on the basis of consultancy assignments. These can sometimes be highly lucrative for academic researchers.

But perhaps the most important issue is that the processes involved in conducting academic research throughout the research life-cycle, i.e. from problem scoping to dissemination of findings. These are actually highly engaging activities which can in their own right deliver a high level of enjoyment.

## **8. The drawbacks of being an academic researcher**

This paper would be an incomplete if it did not include some of the disadvantages of being an academic researcher. The issues described here are probably more pertinent to those who are considering a future career in academe.

At the outset, it is becoming increasingly difficult to find entry level academic research posts. This is a factor of the dwindling financial resources across many universities globally. Many of the posts that are available are not permanent appointments as they are pinned to term contracts which mean a degree of insecurity to those involved.

The next challenge is that it takes a considerable amount of time to be accepted as a part of the academic research community. A doctorate degree such as a PhD rather than a professional doctorate is required. In some cases, post-doctoral work is considered essential. Junior researchers are required to prove themselves through a material public occasion track record before they are given proper recognition. Of course this is no different to any other profession except that in academe the goalposts can sometimes be rather vague. For example, there is no universal agreement about how long a post-doctoral fellowship should last or how many papers a novice researcher should have before he or she would be considered a fully-fledged member of the academic research community.

There is sometimes a considerable amount of bureaucracy and red tape associated with academic research. It may be necessary to acquire permission before a particular type of research programme is commenced. Issues related to funding can be difficult. Many universities operate under very strict budgeting and in some cases it can be quite difficult to obtain even modest amounts of money to support academic research projects. This can be a major impediment to research success.

The Ethics Protocol is often regarded by academic researchers as quite burdensome and there is much debate as to how effective it is in actually controlling the execution of the research project. Although it has almost universally agreed that the requirement to obtain an ethics clearance from the University is essential there is a considerable amount of controversy with regards to how this is done in some instances. By their nature universities, like many large organisations, are risk averse and therefore when reviewing ethics proposals there is a tendency for them to behave in such a way that they appear to be micromanaging research projects. Of course this can never really be the case as the research activity will always be in the hands of the academic and any of those who are working alongside him or her. However, this approach can cause what is often considered to be a large amount of additional work for the academic researcher and produce what appears to be a significant delay in commencing the project.

Being a good researcher requires one to be an excellent project manager and administrator. Many academics who obtain their first grant are not prepared for the work involved in managing the grant. This involves copious amounts of administration, report writing, financial management, and team management. Consequently the academic researcher needs to be much more than just a good researcher.

Academic research is highly competitive. Although there are those who collaborate well and are prepared to help others there is probably at least an equal number of people who do not. Academics have been known to copy or steal ideas and this has led to some unpleasant situations. It is important that the goodwill of ones' colleagues is not taken for granted. Neither should academic researchers feel that everyone they encounter is out to take advantage of them in one way or another. There is a very fine line to be drawn between being

open about one's research interests and the amount of progress that has been made, and not showing one's hand to potential rivals.

In general University faculty are now much more adequately remunerated than they were in the past, but there are still many occasions in which researchers and especially novice researchers are not well paid and whose conditions of employment are not entirely satisfactory. This has become a bigger problem due to the fact that an increasing number of universities have abandoned notion of tenure and that others have increased the number of contract workers who they find considerably easier to manage and to dispense off when necessary.

## **9. Conclusion**

The point of departure of this paper was that over a course of several centuries, the modern university has evolved such that research is central to the life of the career academic. However, given the centrality of this function, there is insufficient discourse in respect of the nuances of the varying facets of the research function.

This paper addresses this gap. It presents a set of values and characteristics which underpin that of agency of the researcher and we argue that research skills on its own do not contribute to success.

The paper further provides an overview of what the essence of research work entails. We introspect issues in relation to academic integrity and the vicissitudes involved in developing a satisfactory research profile. The paper further delves into the relatively new concept of research uptake, on which very little has been written to date. In doing so the paper provides a basis for entry level and even mid-career academic researchers to assess their progress towards being a successful researcher.

Following on this, the paper has provided an overview of both the benefits and challenges of being an academic researcher. An aspirant academic may therefore reflect on this to assess if an academic career is suitable. In fact, it is probably correct to state that academic research offers a particularly challenging career path, if not an outright difficult one, and that the physical rewards which normally accompany this type of career are often not great. However, success in academic research can deliver a particularly high degree of satisfaction and occasionally, academic researchers have been internationally celebrated and even become household names. For those who are really successful there is much to be gained.

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# **Academic Research Papers**



# Deficiencies in Defended Theses in Higher Education Institutions: And so What?

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**Abstract:** Research requires the application of specific methodologies to specific problems. With many textbooks and articles written on the selection and application of appropriate methodologies to specific research problems, one is puzzled to find that research carried out and reported by students of higher education institutions is plagued with various deficiencies. One may ask: “and so what?” If research has to be actualized, then we have to be concerned about the quality of the research. The results observed in students’ research projects and theses suggest issues associated with the teaching, learning, and application of various research methodologies. Although some will attribute blame to teachers and others to students or both students and teachers, in this paper, we don’t do not attempt to validate any of these attributions. Rather, our aim is to characterize qualitatively, the issues leading to, and/or associated with deficiencies of, poor quality research; and hopefully stimulate academic discussion that will place both teachers and learners in a position of candid and objective self-assessment that can enable appropriate corrective actions in future research. We examined 1000 projects and theses selected from a database of 1812 research projects defended in three higher education institutions of learning in Cameroon over a period of three years (2016-2018) in the fields of business, management, education, and information technology (IT). We focused on the rationale and type of research, method of data collection and analysis, assumptions, and analytical tools and techniques. Results of the study point to prevailing issues including methodological misconceptions, lack of rigor and non-adherence to research ethics. We conclude the paper with discussions, clarifications, and recommendations for teachers and learners on how to avoid and possibly eliminate these issues and deficiencies in future research. Future research directions include testing hypotheses relating to teaching and learning methods prone to deficiencies in higher education research and reporting.

**Keywords:** Research Methodology, Theses, Deficiencies, Misconception, Research Ethics

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## 1. Introduction

Research is a systematic investigation that requires specific procedures and actions. This process is comparable to the right procedures in cooking a particular meal. The same ingredients may be given to two or more cooks for the same meal but they produce different flavours based on their experience and training. Many theses and projects defended in higher education are deficient in one or more aspects even though research methodology is a compulsory course all students considering writing a research project or thesis must take. It is not easy to say the origin of the blame comes from the research methodology courses, or the supervisors and or the students. One thing is sure, that one or more missing links and misconceptions could be traced from one or more of the above stakeholders. The concern here is how to avoid the missing links and misconceptions.

The research process begins with the identification of the research problem and the right methodology necessary to undertake the research so as to produce meaningful results. Many students pick old research topics presumed to be research problems without a second thought, bypassing the process of selecting and defining a research problem. With such attitude, finding a research topic is easy, but defining a research problem from the topic is quite challenging. Such hasty start means skipping some stages and ending up with deficiencies in one form or another. This paper dismisses the myth held by some, especially novice researchers on difficulty of producing a good research report. The authors have worked with many students and understand their worries and therefore find it necessary to open the debate on deficiency observed in defended research reports. Even though this paper presents problems identified in the work of novice researchers, it is not our intention to open a philosophical debate on this subject. Our focus is to bring to the limelight core issues researchers must consider in order to minimize and/or avoid deficiencies all together. Novice researchers do not often understand that specific topics require specific processes. It should be



emphasized that for any research activity, there must be consistency between the research problem, research questions, hypotheses, theory, design, procedures and analysis. Research application is useful for the improvement of various areas of human life and given decision-making processes based on research data, the research must be devoid of deficiencies that may lead to applications that may be detrimental, directly or indirectly to human life.

## **2. Literature review**

Statistical approaches are like tools in a mechanic's toolbox. Although in any situation there may be more than one tool that can at least "sort of" get the job done, the good mechanic knows the right tool for the right problem. Likewise, researchers must understand the initial goal of data analysis is to select an appropriate statistical method.

Choosing the wrong tool or applying it poorly makes life difficult and, at worst, the results do not paint an accurate picture (Hair et al., 2017). Serious errors could result if incorrect statistical tests are used. Readers should receive enough information to evaluate the quality of the analytic approach. Also, writers should describe how missing data were managed and explicitly state that assumptions were checked for the relevant statistics. If the data set did not meet assumptions, readers need to be informed of how these problems were managed (Kovach, 2018). There are as many kinds of research as there are purposes behind carrying each kind. The different theoretical perspectives researchers take to study a certain area produces a spectrum of ways for understanding or replicating the research. It follows that at any single point there is a research orientation or purpose. For example, some classifications are based on the nature of the data: quantitative, qualitative, and/or mixed methods. Christ (2009) discusses research as "exploratory, explanatory, confirmatory, action, transformative, and critically oriented mixed methods" (p. 293), while others classify research into four types: basic, applied, action, and evaluation (Patton, 2002). These numerous classifications of research make it difficult for novice researchers to select and carry out an excellent piece of work.

The teaching of research methodology is said to be problematic. According to Aguado (2009), many students at both undergraduate and graduate levels possess very weak foundations for conducting empirical research. This deficit makes it a challenging undertaking that can lead to frustration for both the instructor and the student.

Lewthwaite and Nind (2016) further note that methods teachers and instructors face additional challenges as methodological expertise is often fragmented across academic disciplines. Within this challenging context, efforts to accelerate the development of methodological expertise have not always been informed by pedagogic research, principles and theories. Dyckman and zeff (2014) uphold that the statistical analyses used in some research report have produced flawed results and further maintain that their tests of statistical significance are not appropriate and, more importantly, that these studies do not—and cannot—properly address the economic significance of the work. Groessler (2017) emphasizes on the need for students at all levels to be immersed as much as possible in research practice and that active, authentic and reflexive learning lend itself to this.

## **3. Methodology**

We gathered from the database of three university institutions in Cameroon a total of 1812 undergraduate projects (dissertations) and master theses defended in some fields of study. For privacy reasons, these institutions are referred to here as A, B, and C. These projects and theses were defended over a period of three years (2016 to 2018). Key elements consulted included the topic, formulation of research questions and hypotheses, literature review, the research design, sample size, sampling technique, statistical tool for data analysis and referencing style.

**Table 1:** Theses and projects defended within 3 years

University	Number of theses and projects defended as of:			
	2016	2017	2018	Total
A	286	356	414	1056
B	76	108	157	341
C	98	114	203	415
<b>Total</b>	<b>460</b>	<b>578</b>	<b>774</b>	<b>1812</b>

#### 4. Data collection

The library and database of defended projects and theses were the source of information used in this study. The collection of data was carried out during a two-month period. The focus of the study was to identify data elements presented on the checklist (see table 2). The projects were first identified according to departments. Items on the checklist were evaluated on a five-point scale. Each element on the checklist was scored as indicated in table 2.

The second part of the data collection process consisted of identifying and classifying area of difficulty in the research process in ascending order by lecturers, as well as students who had defended a thesis or project.

The second part of the data collection process consisted of identifying and rating, using a Likert scale, each area of difficulty in the research process by lecturers, as well as students who had defended a thesis or project.

**Table 2:** Check list

Perspectives rated		Rated score				
		0	1	2	3	4
1	Relevance of topic					
2	Formulation of research questions					
3	Formulation of research hypotheses					
4	Clarity of research objectives					
5	Relevant literature review					
6	Research design					
7	Appropriate Sample size					
8	Sampling technique					
9	Appropriate statistical method (parametric, non-parametric)					
10	Appropriate statistical tool					
11	Applying statistical assumptions					
12	Reporting and interpreting data appropriately					
13	Link between the problem, purpose, theory, measures, and analyses					
14	Appropriate referencing style					

#### 4.1 Response format and weighting

A scale ranging from 0 to 4 was used to categorize the responses. The scale represents scores for each perspective. A total of 14 perspectives were examined. The minimum score for every thesis or project examined was 0 and the maximum score was 56. Any thesis or project that scored from 42.1 – 56 was classified as “Excellent”, 28.1 – 42 was classified as “Good”, 14.1 – 28 was classified as “Acceptable” while 0 - 14 was classified as “Unacceptable”.

#### 5. Data analysis and results

As observed in table 1, a total of 1812 projects and theses were defended in the three institutions selected for the study within a period of 3 years. Of these 1812, we examined 1000 projects defended in four areas listed in table 3.

**Table 3:** Examined projects and theses defended in last 3 years in various programs

Field of study	Projects and theses defended in last 3 years	Percentage
Business and Finance	391	39.1
Management	274	27.4
Education	172	17.2
IT	163	16.3
Total	1000	100

Tables 4 to 17 below show the percentage categorization of the defended projects and theses for each of the 14 areas of research difficulties presented in table 2. Given that the focus of this paper is on deficiencies, we will highlight in table 18, those areas of difficulties reporting double digit percentages as unacceptable.

**Table 4:** Projects and theses defended in last 3 years and relevance of topic

Classification rating relevance of topic	Projects and theses defended in last 3 years	Percentage
Excellent	391	39.1

Good	433	43.3
Acceptable	118	11.8
Unacceptable	58	5.8
TOTAL	1000	100.0

The general trend in table 4 shows that, of the 1000 research projects defended, 391 (39.1%) were classified as excellent work, while a greater number of research projects, 433 (43.3%) were classified as good. One hundred and eighteen projects (11.8%) were reported acceptable and 58 projects (5.8%) were classified as unacceptable.

**Table 5:** Projects and theses defended in last 3 years and formulation of research questions

Classification rating formulation of research questions	Projects and theses defended in last 3 years	Percentage
Excellent	160	16.0
Good	527	52.7
Acceptable	293	29.3
Unacceptable	20	2.0
Total	1000	100

Table 5 shows that most of the theses and projects (52.7%) are categorized as good, while very few are classified under unacceptable. Only 16.0% are considered under excellent work, while 29.3 % are just acceptable. It can be concluded that most of the students can formulate research questions.

**Table 6:** Projects and theses defended in last 3 years and formulation of research hypotheses

Classification rating formulation of research hypotheses	Projects and theses defended in last 3 years	Percentage
Excellent	218	21.8
Good	528	52.8
Acceptable	234	23.4
Unacceptable	20	2.0
Total	1000	100

Simple inspection of the table above shows that the formulation of hypotheses in most of the theses and projects (52.8%) are rated as good. This is followed by 23.4%, rated as acceptable. It is observed that 218 out of the 1000 theses and projects were classified under excellent. Only a few theses and projects were classified under unacceptable. This shows that majoring of the theses and projects defended formulate the hypotheses appropriately, as research hypothesis is a transformation of the research question.

**Table 7:** Projects and theses defended in last 3 years and stating of research objectives

Classification rating research objectives	Projects and theses defended in last 3 years	Percentage
Excellent	240	24.0
Good	468	46.8
Acceptable	232	23.2
Unacceptable	60	6.0
Total	1000	100

Simple inspection of the data in table 7 shows that more 70% of the theses and projects had their objectives classified as excellent or good. Only 23.2% are classified under accepted while very few theses and projects were classified as unacceptable.

**Table 8:** Projects and theses defended in last 3 years and stating of relevant literature

Classification rating relevant of literature	Projects and theses defended in last 3 years	Percentage
Excellent	138	13.8
Good	393	39.3
Acceptable	335	33.5
Unacceptable	134	13.4
Total	1000	100

**Table 9:** Projects and theses defended in last 3 years and relevant research design

Classification rating relevance of research design	Projects and theses defended in last 3 years	Percentage
Excellent	120	12.0
Good	494	49.4
Acceptable	214	21.4
Unacceptable	172	17.2
Total	1000	100

**Table 10:** Projects and theses defended in last 3 years and sample size

Classification rating appropriate sample size	Projects and theses defended in last 3 years	Percentage
Excellent	60	6.0
Good	514	51.4
Acceptable	348	34.8
Unacceptable	78	7.8
TOTAL	1000	100

It follows from table 8, 9 and 10 that relevance of literature review, relevance of research design and use of appropriate sample size represent more than 50% of the examined theses and projects. This shows that most of the students understand what is expected in these research processes.

**Table 11:** Projects and theses defended in last 3 years and appropriate sampling technique

Classification rating appropriate sampling technique	Projects and theses defended in last 3 years	Percentage
Excellent	121	12.1
Good	356	35.6
Acceptable	369	36.9
Unacceptable	154	15.4
Total	1000	100

**Table 12:** Projects and theses defended in last 3 years and appropriate statistical method

Classification rating appropriate statistical method	Projects and theses defended in last 3 years	Percentage
Excellent	40	4.0
Good	277	27.7
Acceptable	430	43.0
Unacceptable	253	25.3
TOTAL	1000	100

**Table 13:** Projects and theses defended in last 3 years and appropriate statistical tool

Classification rating appropriate statistical tools	Projects and theses defended in last 3 years	Percentage
Excellent	41	4.1
Good	314	31.4
Acceptable	449	44.9
Unacceptable	196	19.6
TOTAL	1000	100

**Table 14:** Projects and theses defended in last 3 years and applying statistical assumptions

Classification rating application of statistical assumptions	Projects and theses defended in last 3 years	Percentage
Excellent	20	2.0
Good	298	29.8
Acceptable	391	39.1
Unacceptable	291	29.1
TOTAL	1000	100

Table 11, 12, 13 and 14 above show that less than 50% of the theses and project defended in the different field of studies over a period of three years were classified under excellent and good. These theses and projects

suffer from the application of appropriate sampling techniques, statistical methods, statistical tools and statistical assumptions.

A “high” percentage, 15.4%, 25.3% and 19.6% are respectively classified under unacceptable. These areas of the research process demonstrate a great challenge to students. Most of the theses and projects are just acceptable.

**Table 15:** Projects and theses defended in last 3 years and appropriate interpretation and reporting findings

Classification rating appropriate interpretation and reporting of findings	Projects and theses defended in last 3 years	Percentage
Excellent	121	12.1
Good	531	53.1
Acceptable	252	25.2
Unacceptable	96	9.6
Total	1000	100

It is observed from the data in table 15 that 65.2% of the theses and projects defended indicate that there is a link between the research problem, purpose, theory, measures and analyses.

**Table 16:** Projects and theses defended in last 3 years and Link between the problem, purpose, theory, measures, and analyses

Classification rating relevance of appropriate link between the problem, purpose, theory, measures, and analyses	Projects and theses defended in last 3 years	Percentage
Excellent	100	10.0
Good	335	33.5
Acceptable	391	39.1
Unacceptable	174	17.4
TOTAL	1000	100

**Table 17:** Projects and theses defended in last 3 years and appropriate referencing style use

Classification of using appropriate reference style	Projects and theses defended in last 3 years	Percentage
Excellent	181	18.1
Good	350	35.0
Acceptable	333	33.3
Unacceptable	136	13.6
Total	1000	100

**Table 18:** Unacceptable projects and theses defended in last 3 years and corresponding difficulty area

Difficulty area	Frequency	Percentage (%)
Appropriate statistical method	48	24.0
Applying statistical assumptions	35	17.5
Appropriate statistical tool	25	12.5
Link between the problem, purpose, theory, measures, and analyses	24	12.0
Research design	23	11.5
Appropriate sampling technique	17	8.5
Appropriate referencing style	15	7.5
Relevant literature review	13	6.5
Total	200	100

To further strengthen the data presented earlier, a sample of 200 instructors and students were selected from the field of Business and Finance (78), Management (55), Education (34) and IT (33), respectively representing the data in table 3. These instructors have written and defended at least a master thesis and have supervised at least undergraduate project. The others on the other hand have written and defended at least a research project. They were asked to rank the perspectives in table 2 according to order of difficulty. Table 18 presents the first eight most problematic of the research processes. Further consideration on area of difficulty was made by examining the data in table 3 to 17. It was again identified that among the unacceptable theses and projects defended, double-digit percentage counts were identified with the eight perspectives listed in table

18. The classification on the table indicates that difficulty in theses and projects defended is more likely observed in the statistical methods used.

Most theses and projects also suffer from choosing the right statistical assumptions. This shows that students do not understand what statistical assumptions are and when to use them. A good number of theses and projects suffer from making a link between the problem, purpose, theory, measures and the type of analysis. The distinction between these concepts is usually problematic to researchers in the beginning. The difficulty in the research process decreases from statistical related aspects through theory and measurement, to design, referencing, and literature review.

## **6. Discussion, Conclusion, and Recommendations**

The trends of research reports defended over the period of three years in the three institutions have been observed to grow at arithmetic progression. A critical examination of the results indicates that graduates of some field of studies understand the research process better than others. This could be linked to their previous experience, taking of inter-related courses or experience and background of the research methodology instructors and or supervisors. The strengthening of researchers by organizing regular seminars and workshop is imperative.

Of the eight difficulty areas identified (table 18), five of them are with double digit percentage count (ranging from 11.5 to 24.0) while three are with single digit percent count (from 6.5 to 8.5). Of the five double digit percent count, difficulties associated with statistics occupy the top three positions of the list (method, assumptions, and tools) while issues with link between the problem, purpose, theory, measures, and analyses and research design are the bottom two. The three single digit percent counts have sampling technique at the top, followed by referencing style, and literature review at the bottom of the list.

We earlier stated that our paper does not seek to throw the blame of inadequacy on research work to any group, but it has led us to the conclusion from our findings that majority of graduates are not fully equipped with the necessary skills to understand and produce a befitting research report. We are tempted to say here that the training of prospective researchers suffers from a number of shortcomings. However, it was positive to note that in most of the works observed, all the stages of the research process were clearly outlined, despite limitations noted in other areas. It is therefore pertinent to re-examine the way research is handled at the undergraduate and graduate levels. The lack of skills keeps young researchers far from producing acceptable articles in renowned and high impact journals. Research findings are supposed to inform decision-making, but when the issue of limitation becomes a serious problem, decision makers cannot rely on research findings especially those produced by beginners. From our findings, novice researchers seem to have limitations in virtually all the stages of the research process.

As a way forward we emphasize that the root cause of the problem must be identified and addressed accordingly. We recommend that research methodology should be treated as a practical course from the very beginning.

Aguado (2009) emphasize on learning by doing and stress on the “hands-on” approach. Teaching should pay more attention to the eight difficulty areas depicted in table 19. Students’ interest should be developed from the beginning. Supervisors should reteach their students the research process before they engage in it.

Furthermore, research proposals should be stressed as roadmaps to the research process. Statistical classes, data processing, and other research related courses should be introduced as compulsory courses in all fields of studies.

Seeking advice of a research expert and or statistician is a wise decision all beginners should adopt. Research is very useful in the development of other fields of study and should be given importance from the beginning. Research gives students analytical skills and prepares them for more advanced work in their future careers.

The discussions and conclusions of this research are not generalizable, for various reasons, including number of institutions covered but nevertheless, we believe the results as important pointers to research stakeholders (instructors, supervisor, and students). We urge these stakeholders to direct efforts for improved and better

research performance. We believe, all improvements begin with the research instructors, who create foundations for students' research; and so, we suggest that instructors by all means, should ensure students are embedded in the process and mechanics of identifying the right tools to select from the toolbox, and eventually applying the tools to solve the right problem(s) in a student-centred learning approach.

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# Tales of the Unknown and Entanglement: An Early Career Researcher's Qualitative Immersive Fieldwork Experience in a Nursing-Hospital Context

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**Abstract:** The purpose of this paper is to explore and reflect on the fieldwork dilemmas of an early career researcher in conducting management qualitative research in a nursing-hospital context. The complexity of fieldwork dilemmas, especially issues of nursing-hospital contextual factors and identities, as well as how they were negotiated to gain and maintain fieldwork entry and information access is also discussed. Drawing on the most uncertain fieldwork moments that are derived from 22,936 words of field notes collected during a prolonged period of fieldwork, as well as a researcher's retrospective sense of fieldwork experience, author will describe and analyse fieldwork dilemmas. Through employing the lens of reflexivity and the notion of "activating the hyphen" between nursing-hospital insiders, research informants and the researcher, the most uncertain fieldwork moments and their criticality in gaining and maintaining fieldwork entry and information access are selected and categorized into three interrelated tales: confronting official layers of gatekeepers, confronting hesitancy and finding insider roles. Fieldwork dilemmas of the management qualitative research in a nursing-hospital context mainly arise from complex combinations of nursing-hospital contextual factors and multiple identity boundaries and perceptions between the researched nursing-hospital settings, nurse informants and the researcher. In addition to the multiple identity boundaries and perceptions, some constraints and opportunities were experienced with respect to fieldwork entry and information access. The fieldwork accounts provided explore and reflect upon the complicity of fieldwork dilemmas when conducting management qualitative research in a nursing-hospital context, specifically when fundamental differences between the researcher and research informants take place. The practical means described to negotiate contextual factors and multiple identity perceptions will be valuable to early career researchers, especially those preparing for field experiences in nursing-hospital contexts for the first time.

**Keywords:** Management research, fieldwork, nursing-hospital context, contextual factors, identities, early career researcher

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## 1. Introduction

Numerous prominent management contributions propose embracing qualitative research approaches to make a shift toward context-sensitive research (Johns, 2018). It is argued that understanding the contextual conditions helps to develop powerful theories (Child & Marinova, 2014), explain the current status quo of inconsistencies in the research findings (Sergeeva & Aneeva 2016), and enhance the validity of qualitative research findings (Rousseau & Fried, 2001). The contextualisation of research can take place in several stages of the research process ranging from site selection, question formulation, interpretation and reporting.

Context is highly invisible, and thus, it requires greater attention to the research setting (Rousseau & Fried, 2001). Qualitative immersive fieldwork is an appropriate method to contextualise research. This is because a researcher's fieldwork experience itself can extensively uncover the contextual conditions under which data are generated.

Qualitative fieldwork as an instrument with which a researcher immerses themselves in a new social context to understand the researched context is full of real life uncertainties and contingencies (Cole, 2013).

Negotiation of strong gatekeeping (Grant, 2017), psychic discomfort (Chong, 2008) and theoretical and methodological orientation changes (Cole, 2013) are some examples of fieldwork dilemmas. Fieldwork dilemmas significantly emerge from contextual factors (Høyland, Hollund, & Olsen, 2015) and the largely blurred boundaries of identities that take place between a researcher and a researched context (Sherif, 2001).

There are few published accounts that reflect upon the use of immersive fieldwork methods in nursing-hospital spaces by non-nurses ethnographers, with Sandars (2009) and Davis (2000) being two notable



exceptions. However, these two authors predominantly used self-reflection as a lens through which to describe the encountered fieldwork dilemmas and their influence on information access. Emphasising merely on the researcher's experience and emotional status in the ethnographic accounts has been criticised as enhancing the researcher's self-indulgence, exhibitionism, and even narcissism (Chesney, 2001; Coffey, 1999).

Alternatively, the notion of "working the hyphen", initially conceptualised by Fine (1994b), developed to recognise the mutual influence of a researcher and researched identities in the process of knowledge constructions is an appropriate reflective lens through which to create more balanced accounts that take into consideration the relationship between researchers and the researched.

"Working the hyphen", according to Fine, implies that "researchers probe how we are in relation with the contexts we study and with our informants, understanding that we are all multiple in those relations". He further elaborated: "I mean to invite researchers to see how these 'relations between' that get us 'better' data, limit what we feel free to say" (Fine, 1994b, p. 72). Cunliffe and Karunanayake (2013) developed Fine's notion to introduce potential hyphen spaces that are deeply implicated and reciprocally influential in relationships between researchers and the researched. These hyphen spaces, which are determined and reflected upon by the second author's "fieldwork experience" entail insiderness–outsiderness, represented in the degree of a researcher being indigenous to the community being studied and similarities–differences in terms of the positionalities between a researcher and the research informants. According to Humphrey (2007), activating the hyphen through social interactions and conversations between a researcher and the research informants can improve a researcher's possibilities of surviving and thriving in intricate spaces.

The purpose of this paper is to explore and reflect on the fieldwork dilemmas of an early career researcher in nursing-hospital context, in particular, the complexity of fieldwork dilemmas especially issues of nursing-hospital contextual factors and identities as well as how they were negotiated to gain and maintain fieldwork entry and information access. This work draws on the most uncertain fieldwork moments derived from 22,936 words of field notes collected during a prolonged fieldwork period as well as a researcher's retrospective sense of fieldwork experience in order to describe and analyse fieldwork dilemmas. Through employing the lens of reflexivity and the notion of "activating the hyphen" between nursing-hospital insiders, research informants and the researcher, the most uncertain fieldwork moments and their criticality in gaining and maintaining fieldwork entry and information access are selected and categorized into three interrelated tales.

I begin by setting the empirical context for my qualitative management fieldwork, followed by a discussion of illustrative tales that capture the most uncertain fieldwork moments including confronting official gatekeepers, confronting hesitancy and finding an insider role. I conclude by highlighting some methodological and practical implications.

## **2. Empirical research context**

The presented tales in this paper originate from qualitative management fieldwork to gather empirical data for my doctoral thesis research. It explored my research aims to profoundly uncover how the phenomena of cross-cultural knowledge sharing between senior expatriate and host-country national nurses occur, and how they shape and are shaped by their organisational contextual conditions. My fieldwork was based in a Saudi Arabian public university hospital in three non-acute wards, namely the Male Surgical, Obstetrics and Gynaecology wards, for a six-month period (January 2018-Jun 2018). This fieldwork involved the primary observation of the selected hospital wards' physical features and the daily routine and activities of the nurses.

It also involved observing nursing collective practices such as medication administration, shift handover, documentation, orientation program and training workshops, in addition to reviewing HR documents and intensive semi-structured interviews.

## **3. Tale 1: Confronting official layers of gatekeepers**

Negotiating qualitative fieldwork access is time-consuming and a continual process (Feldman, Bell & Berger, 2003; Tracy, 2013), particularly if the researcher is not a member of the setting being researched (Tracy, 2013).

Although fieldwork accounts that provide extended details and insights into the laborious negotiation process of obtaining access to nursing-hospital research sites are scarce (Høyland et al., 2015), some nursing-hospital

ethnographic researchers recognise that gaining access to nursing-hospital sites is a nonlinear process (Moore & Savage, 2002; Toffoli & Rudge, 2006). Thus, since starting my doctoral thesis research in the area of cross-cultural knowledge sharing practices in 2016, I had begun a series of attempts to secure high-quality access with limited restrictions in the Saudi Arabian healthcare organisations that match a set of established criteria.

The difficulties associated with obtaining accessibility for qualitative fieldworks from healthcare organisations, particularly hospitals, are recognised in the literature (Høyland, Hollund & Olsen, 2015; Long, Hunter & van der Geest, 2008). One obvious explanation for such difficulties is represented by the concerns over patient privacy; another explanation is closely related to the defensiveness of hospital authorities and their scepticism and hesitation in permitting entry for researchers to closely observe their workplace (van der Geest & Finkler, 2004).

Though a Saudi native, gaining access to a healthcare organisation in my homeland as a researcher was much more arduous than I initially anticipated. The results of my several unsuccessful access attempts clearly unveiled the fact that additional obstacles surround research fall outside the clinical research arena. For example, I received rejection responses that described my research proposal as “Beyond the hospital’s Research Agendas” or “Unconventional Research”. Two sets of realities can be drawn based on that. First, the value of management research does not seem to be appreciated in nursing-hospital settings. Second, the lack of familiarity with ethnographies and immersive fieldwork methods might have evoked scepticism, as these hospitals seem to merely rely on experimental and statistical research methods to address clinical issues.

Gaining access to nursing-hospital sites depends heavily on the researcher’s capacities to seek alternative paths in order to negotiate strong gatekeeping (Abdulrehman, 2017). Therefore, after several unsuccessful attempts to gain direct access to hospitals, I realised that without insider connections and support from within a hospital, it would be difficult to accomplish my research objectives. This thought was underpinned by what prior nurses ethnographers suggest about the significant need for early identification and establishing contact with key insider individuals such as managers or supervisors who have the knowledge and experiences that enable them to realise the potential value of a research proposal and assist in suggesting an appropriate route to seek and proceed with access endeavour (Høyland et al., 2015). In this process of attempting to gain entry, I engaged my family members and friends who have close contact with hospital insiders. Ultimately, I obtained some oral offers and promises to facilitate my research activities, but I had not been helped or guided to precede ethics and official permission. Therefore, I decided to forego these oral offers and continue looking for alternative official trajectories. I considered seeking support from nursing professors who are affiliated with universities’ hospitals. Thus, I sent numerous formal emails, which eventually yielded support from a nursing professor, based at a Saudi Arabian university who was convinced by the values of my research. She was also willing to close a partnership as a local supervisor in order to share knowledge of the common access procedures for the university hospital, which involved assistance in fulfilment of the ethics requirements and seeking ethics approval from the University hospital ethical committee.

I spent substantial time completing what could be described as highly fixed ethical applications and requirements that are primarily tailored to accommodate clinical experiments, quantitative and interventionist research designs. Specific details regarding interview questions, the number of the intended research informants, informed consent procedures, research statistical analysis, research clinical objectives and outcomes were required to be supplied and presented at the inception which is inconsistent with the principles of qualitative management research and ethnographic fieldwork where researchers gradually develop research instruments and questions as their research proceeds. Likewise, several nursing-hospital ethnographic researchers (Allbutt & Masters, 2010; Smith, 2008) acknowledge the difficulty of reconciliation of the rigid ethical applications and requirements of healthcare organisations with the elastic nature of qualitative research design. To bridge these existing gaps between the hospital ‘nature of ethical applications and requirements’ and the tenets of management qualitative fieldwork, my local supervisor and me discussed how I should adequately respond to these ethical aspects. For example, my local supervisor indicated the need to be as precise and explicit as possible. Thus I included details about how collective practices should be accessed in liaising with head nurses and what broad themes I intend to focus on during interviews. After completing and passing the ethical applications and requirements the ethics approval was granted after a 4-month process and was based on the condition that I travelled to Saudi Arabia to undertake my fieldwork.

Upon arrival, I received a copy of an internal memorandum on my email from the nursing administration, stating my ability to commence my qualitative fieldwork and data collection activities. I initially felt excited, until I read the given conditions “Period of data collection should not interrupt nurses’ duty or compromise patient safety” and “there is no pressure for the nurse to participate in the study”. My concerns arose and my excitement faded away as I realised that new constraints might be imposed.

As I was advised by my local supervisor, I took copies of the ethics approval and memorandum to the hospital academic affairs for the issuing of a hospital entry ID card, but was surprised to learn about a miscommunication that had occurred between the hospital ethics committee, the nursing administration, my local supervisor and me (the researcher). This placed me in direct encounters with the second and third layers of gatekeepers to negotiate access. The nursing administration claimed that I should have obtained permission from the academic affairs before proceeding to the nursing administration. I was also informed that I may peruse a procedure to gain academic affairs entry permission and a hospital ID card, but my request could be rejected. Consequently, the entire hospital ethics clearance and nursing administration permission become invalid. My local supervisor was surprised, as this process seemed to be new and untested.

To secure and maintain nursing-hospital settings entry, I had to engage in a series of negotiations with the third layer of gatekeepers, which included the deputy of academic affairs. During one negotiation episode, I was involved in an intense discussion about the nature of my research, informed consent procedure and core purpose of doing fieldwork with the deputy of academic affairs who has different a vocational identity from mine that is physician. The following excerpt illustrates how I initially experienced my identity as being the “suspicious Stranger” as a potential constrain to entry and how the shift in the perception of deputy of academic affairs facilitated my access to nursing settings as she had started to see me solely as a “PhD student”:

*“I began to relatively comprehend the possible cause underlying the occurred miscommunication. Although the deputy of academic affairs and myself both native Saudi from the same region speaking our native Arabic language, I felt in many moments as we were speaking a different language. At one point, I felt that my explanations of the research objectives and informed consent procedures were not understandable by her. For example, at many points she questioned the meanings that my descriptions convey when I described my research objectives or the informed consent procedures. Although she had not commented on the research objectives, using a cautious tone, she voiced these concerns: “Some nurses might get upset, even if they agreed to voluntarily take part they might still come to us later to complain”. Then I asked her why they would complain if the right to withdraw at any point was explained to them. She remained silent, as my inquiry seemed to be unexpected. Then, I followed by clearly stating the main purpose of doing fieldwork in the nursing settings that is to fulfil the requirements of my PhD degree. She seemed to be persuaded by my purpose as she eventually assured me of the high prospect of obtaining positive outcomes. Fortunately, after two weeks, I had been granted entry to the hospital facilities by the academic affairs and was issued with my ID card.”*

Reflecting upon the prior excerpt indicates that negotiation nursing-hospital settings entry never ceases and its effort intensifies for those outsider researchers. This is because engagements in a series of social interactions to cross over combinations of identity dilemmas contextual factors such as being the suspicious stranger and lack of familiarity with the general principles of management research and ethnographic fieldwork methods are significantly facilitated by sharing a common vocational language. Therefore, nurses’ ethnographers conducting research within the clinical area have an advantage over other researchers as they share a common language and knowledge with nursing-hospital gatekeepers (Borbasi et al., 2005; Wind, 2008), which possibly facilitate the negotiation process.

#### **4. Tale 2: Confronting hesitancy**

Research informants can react intensely to researchers’ attempts to establish rapport in a multiplicity of protective ways (Crowley, 2007). Research informants might show hesitancy that stems from either diverse positions between the researched and researcher such as gender, race and body type (Best, 2003; Sallee & Harris, 2011), or the level of familiarity with the research topic (Broyles, Rodriguez, Price, Bayliss & Sevick 2011). Further, outsider researchers to the field of healthcare experienced a feeling of being burdensome

(Sanders, Wadey, Day & Winter 2019), and felt resistance to their presence and uncooperative attitudes (Kamarunzaman & Selamat, 2015) without stating the root causes.

In the early days of my fieldwork journey, I felt that I was a complete outsider stranger to all nurses. I was not sure at that point whether contextual factors such as the work conditions of the hospital's wards were mirrored in nurse's attitudes as they are in a rush to finish their various assigned tasks in a timely manner or their attitudes were influenced by aspects of my identity which later became detrimental to my attempts to successfully interact and build rapport with them. This appeared from the first attempt to approach nurses as I noted in my field notes:

*"This is really scary and looks perturbing", was the first impression that I formed about the general attitude of potential research informants, as I greeted a number of nurses who were sitting around the workstation, when none of them exchanged greetings or even made eye contact. The white coat that I wore did not initially give me the visibility that my local supervisor and I thought it could do. Nurses seemed to me as if they were highly disconnected from their surroundings and willing to engage only with their patients and those who were part of their nursing community. This left me wondering about the possibility of securing social acceptance and form my relation to the nursing community"*

After a couple of weeks, I began to experience a shift in my identity status from a complete outsider stranger to a native outsider due to the nature of the relationships with novice native nurses. I had not experienced negative issues in socialisations and building rapport with the novice native nurses. We were native, shared the same culture and language, females from close age groups and early careers in our fields. Indeed, they saw me as a "native researcher" who should be supported as much as they can, because they "being there" experienced the involved complexities in conducting research projects in their final year of university studies.

Although I expected to encounter difficulties in establishing rapport with senior expatriate nurses, I had not entirely comprehended the possibility of confronting incessant negative reactions to my presence as an observer on the ground, and later as a recruiter in the wards. On many occasions using the "researcher" label seemed to be intimidating to them. Based on the negative reaction that I had received I used the "Ph.D. Student" label instead as part of my daily routine of introducing myself and communicating the purpose of the research. I also presented reader-friendly copies of informed consent and memos before I intended to join any collective practices or placing any sort of inquiry. In addition, to overcome the contextual factor of hectic work conditions that often take place during day shifts, I went to the wards during night shifts where more relaxed nurses are assigned fewer tasks. I adopted all of these approaches to minimise negative reactions in order to improve information accessibility.

I relatively succeeded in gaining social acceptance from several senior expatriate nurses as they started to perceive me as "student"; consequently I experienced my outsider identity as an opportunity to join collective practices and place inquires. However, negative reactions toward me ranged from ignoring greetings, avoiding socialising with me, spacious looks and hesitancy to be part of the research continued to be presented from other senior expatriate nurses. The following excerpt elucidates an encounter where I tried to recruit a senior expatriate nurse for an interview. I had set up a time and a date for an interview with a nurse clinical instructor the day before the interview was to take place, however, she abruptly hesitated the day of the interview and then eventually withdrew:

*"Where are you from?" using cautious tone an expatriate nurse asked, as if she had realised a new point. "I am collecting data for my Ph.D. thesis as I mentioned to you yesterday." I then explained one more time the research purpose and showed her the ethics clearance and memo, so she could verify my identity. Unlike the recruitment day when she immediately expressed her willingness to take part in the interview without displaying any doubtable or hesitant behaviour, today with full attention she read through the memo line by line and then "I need to check with my area manager" she said. While I was waiting for her to respond, my thoughts flew as I had received a suspicious look from her deputy head nurse: she was figuring out if she has to take part in the interview to avoid implicit future negative consequences by a hospital authority or the participant is completely volunteering as I explicitly elucidated and as stated in the memo. After a few minutes, she came and said "the area manager told that it's up to me if you want to take part, but I still do not feel comfortable" then she deliberately shook*

*her body as an indication of fright as if she will be a subject to negative consequences if she takes part. After a further negotiation, I just thanked her and left the ward”*

This encounter left me wondering about the displayed behaviour of hesitancy and the causes of different perceptions toward me. None of the hesitant senior expatriate nurses voiced mistrust or raised any specific concerns. However, during socialisation with a native nurse, she told me that she had received advice from a senior expatriate nurse to avoid conversations with me as a way to discourage me from joining their collective practices because of concerns over reporting any heard or observed issues to the hospital higher authority. At that point, I become aware of the role of the multiplicity of my identities as being an outsider to the nursing-hospital settings and a researcher in influencing some senior expatriate nurses’ perceptions as they saw me as a “spy”. Similarly, although Allen (2004) shared nursing identity with research informants, they did not utterly perceive her as a member of the nursing group which was evidenced in voicing concerns over making judgments about the quality of their practices which could be reported back to the administration. In addition, several nursing-hospital ethnographers experienced the intersectionality of identity dilemmas that play out at several moments in the fieldwork, which result in being differently perceived in a moment as complete insiders or as complete outsiders and occasionally both at once (de Melo et al., 2014; Ledger, 2010). Hence, I apprehended that the different perceptions of senior expatriate nurses toward me emerged from complex combinations of the interplay of the multiplicity nature of my identity such as being native, student versus researcher, outsider to the nursing - hospital setting and other contextual factors such as hectic work conditions and the degree of familiarity with the tenants of ethnography and qualitative research methods. I realised the need to actively seek an insider role to assist me in creating further social interaction opportunities to build rapport in order to enhance information access.

### **5. Tale 3: Finding insider roles**

Securing formal access does not guarantee rapport with individual research informants (Cunliffe & Alcadipani, 2016; Siwale, 2015), therefore, prior research emphasises the significance of finding a role that offers the researcher the best opportunities for building trustworthy relationships and being part of different situations (Wind, 2008). In the nursing-hospital settings, no day passed without an internal struggle in answering the question of how I could find other common ground to be perceived as part of the nursing community or at least not as a suspicious stranger. Even though novice native nurses and some groups of expatriate nurses socially accepted me as “an academic researcher” and other groups of expatriate nurses socially accepted me as “a Ph.D. student”, I continually questioned my role to gain acceptance from those groups of expatriate nurses who perceived me as a “spacious stranger or spy”. As a result, searching for a role that potentially assists me in reducing the physical discomfort, building rapport to gain and maintaining access to more senior expatriate nurses became my main preoccupation throughout the period of the fieldwork.

Adopting an insider role is a substantial advantage of nurse-ethnographers when conducting fieldwork in nursing-hospital contexts over other researchers. A review of several fieldwork accounts conducted by nurses’ ethnographers shows that adopting a relevant role and shifting to participant-observer have been somehow considered to be an easier task supported by the fact that nurses’ ethnographers and the nurses informants share a reciprocal nursing identity compared to others social researchers (Borbasi et al., 2005). On the contrary, positioning myself in relation to the nurses, particularly those senior expatriate nurses who perceived me as a “spacious stranger or spy” were an intricate and complex endeavour. In one sense, I was partially an insider as I was a native academic, having teaching experience in a national university where I worked with a culturally diverse team. In addition, being a native I am fully aware of different national regions’ customs, norms, languages, history and religious beliefs. Nonetheless, in another sense, I was also an outsider, having no nursing / medical training, affiliation with the health care organisation research or strong networking relationships with the hospital’s key gatekeepers.

Outsider researchers to the nursing- hospital settings reacted differently to the dilemma of fieldwork roles. Davis (2000) maintained the role of a passive observer, but she cited several occasions in the hospital setting where besides her feeling of marginalisation, she was neither able to downgrade the status of suspicion about her intentions nor cope with deliberate efforts to make her observations difficult. To overcome these access difficulties, other researchers (Sanders et al., 2019) maintained volunteer roles that assisted in earning social acceptance and building mutual relationships. Hence, guided by prior fieldworkers’ experiences, I entered the hospital with an assumption that offering to volunteer in any sort of basic administrative tasks would allow me

to integrate into the hospital wards and closely interact with nurses. Although I had expressed my willingness to the ward heads, nurse clinical instructors and nurse preceptors to volunteer in specific administration tasks, they were hesitant to designate any duties to me. As a result, I had to actively seek any other possible role that I was qualified to perform so I can demonstrate assistant initiative toward it. I found myself consciously and unconsciously getting involved in situations where communication misunderstandings between native patients and expatriate nurses took place to play the role of an Arabic-English interpreter. The following excerpt describes one of these situations:

*“In such a situation when I was hanging around the nursing workstation one day, a patient left her room and came toward a senior expatriate nurse who was entering data into the computer. She asked using a regional language to give her an extra blanket. The senior expatriate nurse was staring at her and did not seem to understand what the patient was saying, although the patient repeated her request this time using sign language. At this point I jumped into the conversation and interpreted what she was trying to say then I asked the patient her room number and assured her I will bring the blanket to her. After I returned to the station, the senior expatriate nurse had thanked and engaged in casual chat with her”*

Overall, I experienced the multiplicity of my identity in the facets of vocation, culture/nationality between senior expatriate nurses and myself sometimes as constrains and other times as opportunities. On one hand, being culturally and nationality different from expatriate nurses, I was not able to take part in many casual social opportunities to cross over largely blurred identity boundaries and negotiate access because they spoke in their own native languages which were not the hospital official languages that I can understand. On other hand, being from the field of management studies led to perceptions shift of many senior expatriate nurses who saw me initially as “spacious stranger”, as I felt there was less tension associated with me joining and observing collective practices.

## **6. Conclusion**

In this paper, I have explored fieldwork dilemmas that have I encountered and reflected on how they were negotiated during my fieldwork experience as an early career researcher in a nursing-hospital context in my native country of Saudi Arabia. Through employing the lens of reflexivity and the notion of “activating the hyphen” between nursing-hospital insiders, research informants and the researcher, the most uncertain fieldwork moments and their criticality in gaining and maintaining fieldwork entry and information access were selected and organised into three interrelated tales: confronting official layers of gatekeepers, confronting hesitancy and finding an insider role. This fieldwork account contributes to the management qualitative literature in multiple ways: (1) It highlights the fieldwork dilemmas involved in conducting qualitative management research within the nursing-hospital context, specifically the associated methodological dilemmas when there are fundamental differences between the researcher and researched informants; (2) As there is insufficient practical guidance on how fieldwork dilemmas can be negotiated in a nursing-hospital context for early career researchers within the current literature, it provides a practical means for reconciling contextual factors and identity dilemmas related to nursing-hospital site entry, fulfilment of ethics committee requirements, building rapport through social conversations of mutual collaboration and to cross over disagreements and identities perceptions not only the official gatekeepers and research informants, but also with other insiders; and (3) Explicit descriptions and reflections on the conditions under which data are generated in the fieldwork process through addressing the fluid and multiple formed nature of researcher-researched identities and other influential site contextual factors as part of the research methodology offers a way to contextualise the findings of management research which contribute toward enhancing the trustworthiness and richness of qualitative research findings.

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# Use of Activity Theory for Critical Data Analysis in Information Systems Research

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**Abstract:** This paper will use Activity Theory, to demonstrate the process of critical analysis of qualitative data in Information Systems research. The paper briefly introduces the elements of an activity system (the subject, object, outcome, mediating tools, rules, community and division of labour). Thereafter, practical examples from the work of two recent PhD students and one recent MSc student will be used to show the importance of identifying and analysing activities that are found in the development and use of information systems and to illustrate the analytical process. This set of examples is intended to highlight the applicability of Activity Theory in analysing data from projects whose topics and contexts are totally different. The first investigates the e-readiness of end users (citizens) and government employees in embracing the e-government initiative in the Western Cape, the second studies the use of a persuasive technology app in education in South Africa and the third focusses on Information Security Management in Uganda. The examples illustrate both the process and the value of such analysis. The primary strength of Activity Theory is its ability to highlight reasons for failure or disappointing performance as originating from contradictions either between different activities, between an earlier version of an activity and a later version as the activity evolves, or within an activity (between the elements of that activity). A further advantage is that the analytical process related to Activity Theory is fairly structured but nevertheless can produce insights that are not immediately obvious. This structure aids researchers who are uncertain how to analyse qualitative data effectively. Activity Theory is said to act as a lens in data analysis.

**Keywords:** Activity Theory, contradictions, data analysis, Information Systems research

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## 1. Introduction

This paper explains how Activity Theory (AT) can be used in Information Systems research. To illustrate this, three examples (cases) from recently completed post-graduate research are used to highlight differences in the way that AT can be used and how AT adds value. The Literature Review explains the theory and its value to Information Systems research. References have been limited to the classic papers of the major contributors to AT) and to recent papers.

## 2. Literature review

### 2.1 Overview

Hashim (2007:2) defines AT as "...a theoretical framework for analysis and understanding of human interaction through their use of tools and artefacts." AT was developed in the Soviet Union in the 1920's and 1930's by Russian psychologists Vygotsky, Rubinshtein and Leont'ev as an approach to psychology that unites human consciousness and human activity (Hasan and Kazlauskas, 2014). AT provides a cultural, historical and theoretical framework used for psychological, educational and Information Systems research focussing on human activity (Korpela, 2000). AT has an associated framework that assists researchers in analysing, studying, designing, describing and understanding how and why activities happened. The theory-based conceptual framework has a basic set of principles and allows the researcher to inquire about and to explain phenomena and human activities that are of interest (Uden, 2007). AT is also described as being a philosophical and cross-disciplinary framework that is useful for studying both the individual and social levels, which are interlinked in different forms of human practices as development processes (Kuutti, 1996).

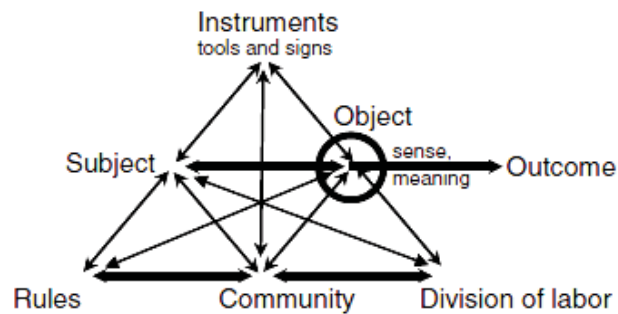
The basic element of the AT, the activity, is more than just active but is purposeful and is carried out as meaningful actions through physical or psychological tools in a social environment (Hasan and Kazlauskas, 2014). Leont'ev described activity as holistic, high level, collaborative and constructive, such as, undertaking a work project that is levelled above goal-oriented actions and underlying operations. An activity both facilitates, and is facilitated by the psychological or physical tool used.

### 2.2 The activity system

Vygotsky (1978) introduced the concept of mediated action with three elements of an individual "action of work" (an activity), namely, the subject, tool and object. The subject is engaged in an activity and this is

mediated by tools to achieve a certain object. The focus of the activity is the object and the purpose of the subject is to engage in an activity (Hasan and Kazlauskas, 2014). Tools can be primary (physical artefacts such as, technologies and machines), secondary (organization customs and practices) or tertiary (operational environment).

Korpela et al. (2002) identify the objects as the “raw material” and a “starting point” of the work process; these objects are turned into outcomes by the work process of the activity. The outcome is the motive for the whole activity (Korpela et al., 2002). In AT, the subject (human doer) and the object (things being done) form the core of the activity and the outcomes of the activity can be either intended or unintended (Hasan and Kazlauskas, 2014).



**Figure 1:** The main elements of the activity system (Adapted from Engeström (2010))

The original model does not depict the role of the individual subject within a societal structure. However, subsequently Engeström (1987) proposed an extended model that shows the collective nature of human activity (Kizito, 2015). Engeström (1987) added the rules, community and division of labour, which placed the emphasis on the community, object and outcome (See Figure 1). The relationship between the subject and the community is mediated by rules (norms and conventions of behaviour). The relationship between the community and the object is mediated by division of labour, and the relationship between the subject and the object is mediated by tools (Barab, Evans, and Baek, 2004). An activity is made up of tightly related and associated elements and hence an activity has to be looked at as a holistic system rather than a collection of independent constituent parts. During the activity, the object often changes and therefore might manifest itself in different ways.

AT regards tools as artefacts or systems (such as language) that are created as a result of a social process and previous activities. AT incorporates cultural characteristics in its view of tools by combining the social and the technical; an emphasis is, however, placed on technology for its ability to transform an activity which may, in turn, be seen as a norm or as a means of labour in subsequent activities (Karanasios, 2014). Hence, rules and norms govern the use of tools. However, tools such as technology may also influence and transform the rules and norms of an activity. This explains how and why new ways of working are introduced which may create new divisions of labour with new efficiencies and new types of labour.

### 2.3 Hierarchical structure of activity, actions and operations

An addition to AT is a three-level model for structuring an activity (Leont'ev, 1978). Since some studies require a more detailed investigation than at the level of an activity, a hierarchical structure was proposed in which the top level, the activity, is motive driven and is composed of goal-directed actions and the actions themselves are composed of operations. The motive of the individual activity is to transform the object in order to achieve an anticipated outcome. At the action level, the aim, to achieve a certain goal, is contained in the object itself. It is difficult to clearly define an object, meaning that it might be interpreted differently by different people or might change.

The AT object of research is always collective (the community is included) in spite of the fact that the main action of interest may be individual. This gives the analysis depth and results in a holistic understanding of the interactions within the information system.

### 2.4 The work activity

Korpela et al. (2002) identify a focus of the AT in IS research as a “work activity” which comprises of people (or actors) working to produce a fundamental outcome in an organised way. These actors do not need to be

working at the same time or place. Actors play different roles (referred to as “individual actions”) in transforming the object to the outcome (Korpela et al., 2002). Actors put together their individual or shared means forming the work process.

Objects are described as being generators and enforcers of attention, motivation, effort, and meaning. People are innovative and hence constantly change the objects and create new objects. A social understanding of the changing character of these objects, which is facilitated by AT, enables it to be particularly relevant and strengthens its ability to contribute to the community. The new objects are normally a consequence of unplanned multiple activities. Since the objects are so important, an activity is meaningless on its own. As stated earlier in this section, the subject (individual person), the object, the mediating instruments or tools, and the goal are the elements in Leont’ev’s original model. The famous example is given of a carpenter (subject) applying his skills to construct or transform scaffolding (object) to build a house (goal or outcome) using a hammer, nails and planks (tools) (Mursu, Soriyan and Korpela, 2003; Mursu et al., 2007).

However, an activity is better understood when it is merged with other individuals’ actions. Every activity has its owner, in this case, the actor or subject. For a collective activity, there is a collective subject, and for an individual activity, there is an individual subject. A collective activity cannot happen without more than one individual participating in it, but the collective activity does not completely determine individual actions because each individual is a free agent with his or her own goals and ideas. Hence, individuals can resist new or existing norms and rules in order to form other ones, which makes it difficult to predict their behaviour (Lektorsky, 2009). The combined activities are referred to as a collective work activity. The motive of the collective work activity is to transform the shared object in an attempt to produce the collective outcome (Korpela et al., 2000).

For the individual activity to function satisfactorily as a merged collective work activity, some form of coordination and communication between the separate activities is required. Since the individual subject is participating in a community, there have to be shared rules to govern the relationships between the subjects and the community, the relationship between the community and the object, and the division of labour for the shared object and outcome.

The work activity is a systemic entity with elements that must work together, creating a mode of operation all contained in a work activity. The activity system (Figure 1) can be seen to be embedded in this more complete view of the work activity as a systematic entity. An activity can evolve over time. The move from one version to another could cause a misfit, which might result into contradictions. The activities do not work alone, as they have one or more relationship between them that needs to be mediated by means of the work activity. AT links the individual subject and the societal structure (community) by taking the object, mediated artefact (tool / transformation) and the goal (outcome) in a collective activity system as its unit of analysis (Uden, 2007).

## **2.5 Contradictions**

One activity is not isolated from other activities as the outcome of one activity is often intended for some other activity; the outcome in one activity may become an object, or actor in another activity (Korpela et al., 2002). Hence, activities are independent but un-isolated units that are influenced by the environment and other activities and this may cause contradictions (Adams, Edmond and Hofstede, 2003; Engeström, 2010).

Lektorsky (2009) argues the values and norms of an activity should be taken into account in order to understand collective activity in terms of its actions, operations, motives, goals and tasks. However, Engeström (1987) points out that in the collective activity system there may be modifications of the system, which could result in dis-coordination, contraction and conflict both outside and within the environment in which the collective activity occurs.

According to Engeström (1987), within a collective activity, a division of labour naturally occurs when there are differences of status. This division may be caused by physiological factors, cultural conflicts or increases in population, by-laws, or any of many other factors. The division of labour implies that activities do not occur in isolation and thus need to be understood within their environmental context. During the division of labour, some contradictions may occur, manifesting themselves as problems, ruptures, breakdowns, new ideas, and so on. In other words, different people or groups, who are assigned different parts of the work (be these operations or actions) may not understand their role in the same way that others do, may not carry out their

tasks as expected by others etc. In other words, due to a division of labour and the involvement of the community, contradictions may occur; these contradictions do not just happen, they shape and change the way things are done (Karanasios, 2014).

Contradictions are regarded as sources of development and not as problems because they facilitate change. But this is not the only source of contradictions as will be seen in the discussion of the case studies. Activities work through contradictions resulting in a change leading to improvements (Uden, 2007).

An activity system has several levels of contradictions that must be identified and analysed in order to better understand how, when, and why an activity system develops. The primary contradiction is the basic source of instability and development and is found within any of the six nodes of an activity. It manifests itself as a result of tensions between use value and exchange value. In the case of the use value, the participants of an activity benefit directly from the outcome. However, the exchange value indicates the worth of something when it is exchanged for something else. Secondary contradictions refer to a conflict between two different nodes of the activity system (Uden 2007; Foot 2014). Other contradictions may occur between the object and outcome and between separate activities (Mursu, Soriyan and Korpela 2003; Mursu et al., 2007).

AT can help to uncover contradictions and congruencies and this helps to uncover the relationships and links that are existent in a deep social system (Karanasios and Allen, 2018:44). AT helps the researcher to identify contradictions and conflicts in the scenario being analysed. Contradictions and conflicts are important and highlight what needs to be changed as they reflect the requirements of different customers and help us prepare a consolidated list of requirements (Uden et al., 2017). Identifying contradictions can assist researchers in explaining why a technology has not achieved its desired and expected outcomes. Contradictions help activity systems to evolve from time to time.

## **2.6 AT in Information Systems Research**

Activity theory has been used in research in education, social science, anthropology and work science but also in Information Systems research. Examples of use include those described by Gedera (2015), Jones, Edwards, and Viotto Filho, (2016) and Collins et al. (2002). Even though AT was proposed before the wide-spread use of computers, it has the potential to provide an insightful and holistic “understanding and analysis in many areas of information systems” (Crawford and Hasan, 2006:3). The study of information systems is concerned with both human and technical aspects (Crawford and Hasan, 2006) hence the need for a holistic framework.

Although there are several frameworks that use human action as units of analysis, they fail to provide a holistic analysis of real-life situations because they focus on isolated individual actions (Kuutti, 1996). According to Woolgar and Suchman (1989a), actions are better understood when they are analysed within a context and are less well understood when they are analysed outside their context. AT can help the researcher develop insight into the interactions that exists between different components of an information system and how they impact on the achievement of the objectives and subsequently the outcome (Uden, Lu and Ting, 2017).

The shift in Information Systems research continues to inspire new perspectives on the role of technology, as technology is thought to have surpassed its initial role as merely a tool as envisaged in the traditional AT (Karanasios and Allen, 2018). Forsgren and Byström (2018) present an example where technology (specifically social media) has been found to perform more functionalities than just being a tool - maintaining coherence, creating and improving awareness and socialising (p. 444). In their study, Forsgren and Byström (2018) applied AT to show several contradictions and this gave rise to a deeper and holistic understanding of the role of technology from multiple dimensions rather than the mono-perspective.

As noted in Section 2.3, using the AT framework, activities can be analysed at three levels, namely, activity, action and operation. The division helps the researcher in shifting the focus from the greater activity to sub-activities or sub-tasks. Karanasios and Allen (2018) argue that AT has the ability to “address the challenge of studying the interaction between technology and actors” (p. 439). This implies that the study of action, operation and actor has the ability and potential to assist in the understanding of the dynamics of technology and its role in the activity without neglecting aspects of material and the social setup (Karanasios and Allen, 2018; Kelly, 2018).

AT also helps to bring understanding of the role of intermediary objects in the study of technology use by societies of users (Miettinen and Paavola, 2018).

### 3. Examples from recent post-graduate work

#### 3.1 Common factors

All three studies adopted the interpretivist paradigm as part of three very different case studies. All three were exploratory research but offered explanations regarding the data collected. The third case study is not presented in much detail, as at the time that this paper was submitted it had not yet been examined.

#### 3.2 Case 1:

**Title:** “Qualitative Assessment of the E-Readiness of End Users (Citizens) and Government Employees in Embracing the E-Government Initiative in the Western Cape”

**Research question:** “Why has e-government development, growth and usage by citizens and government employees stagnated over the past decade in the Western Cape?”

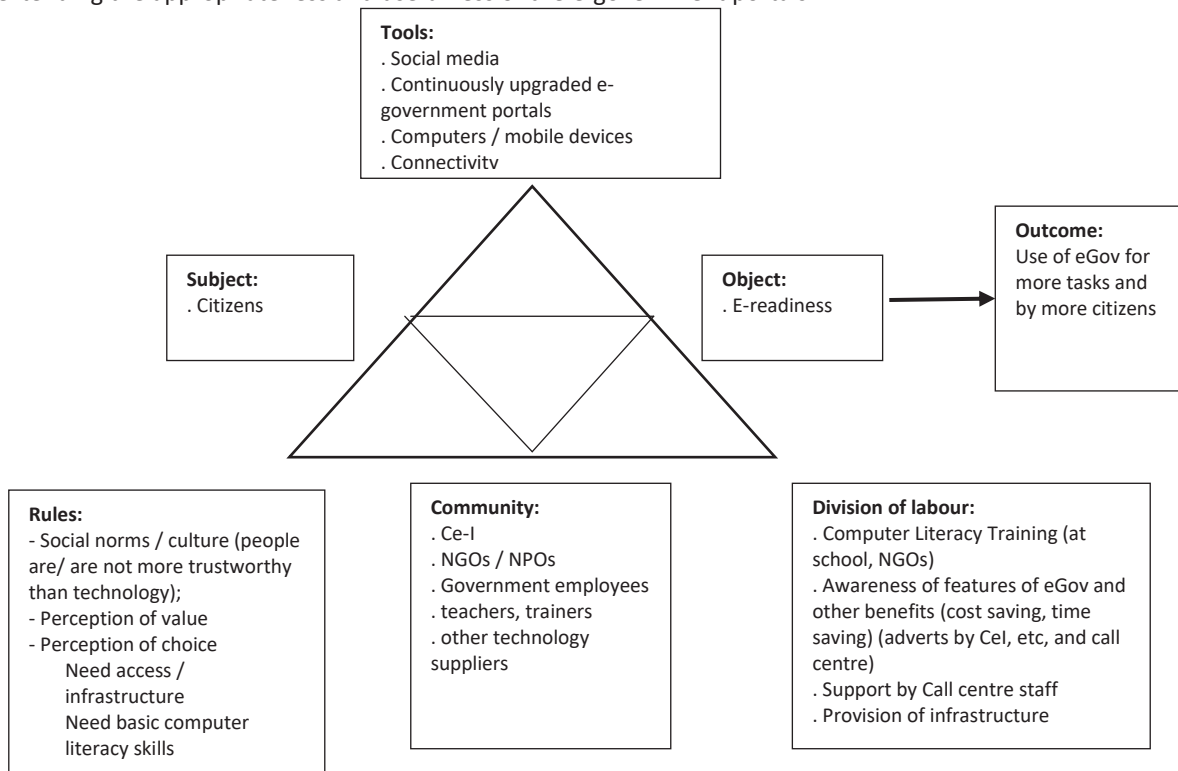
**Research approach:** Interpretive research approach using qualitative data since it aimed to give an in-depth understanding of citizen and civil service dynamics as far as e-readiness for e-government initiatives is concerned. No quantitative data was needed but a detailed understanding was required of the efforts, challenges and opportunities that shape the e-government sphere in the WC. A case study was used to gain this understanding of the e-government and e-government readiness aspects, including the social aspects and the relationships that exist among the various aspects.

**Data collection** took place from June 2017 until Sept 2017. There were ten one-to-one interviews (3 Strategists/Researchers; 2 Business Analysts; 3 Champions; 2 Strategic Unit Heads) and review of documents, (policy and strategy documents).

#### Activities Analysed

The first activity: Use of e-government by citizens (see Figure 2).

The second activity: The enhancement of e-government portals by the Ce-I staff with the aim of improving and extending the appropriateness and usefulness of the e-government portals.



**Example Activity System**

**Figure 2:** Activity system of e-government use by citizens

**Data analysis:** Combined thematic analysis with AT: Text generated from the transcribed interviews was organised according to emerging patterns (themes) which were in turn expanded, extended and developed into major ideas that were then looked at from an AT perspective (see Figure 3).

**Example of Analysis**

*3.2.1 Contradictions:*

**Example quotations from the analysis**

“The fact that there has not been much greater increase in the number of users points to some contradictions within the E-government use by citizens activity system. One of the Rules in the activity is that citizens are fully aware of the choices they have, that is, citizens can make rational, informed choices that will allow them to complete their tasks quickly, easily and relatively cheaply.”

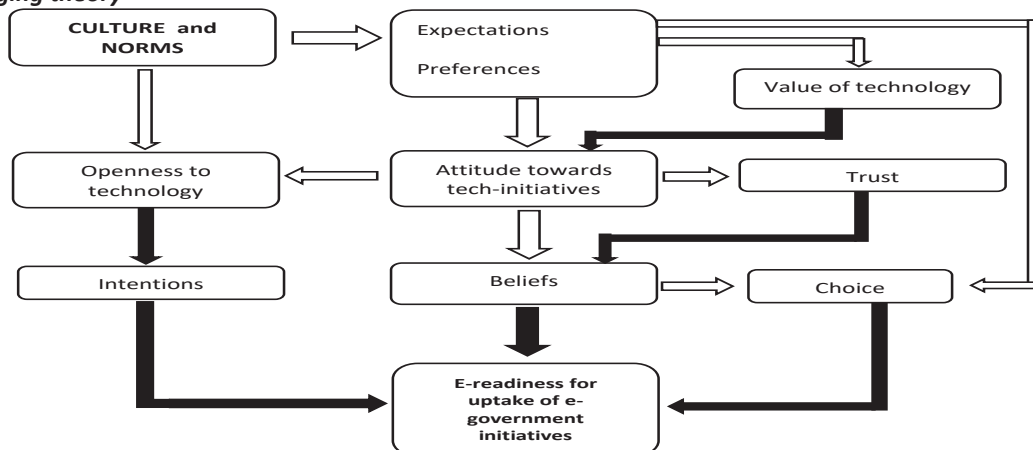
“ The Ce-I has to embark on the activity of upgrading the current e-government portals, adding more value to what these portals currently allow citizens to do. This is a response to one of the contradictions found in the E-government use by citizens activity system) where citizens have access to technology and use it to some extent, the technology fits the task and yet e-government systems remain underutilised. Possible reasons why citizens may not be using the portals is that they see no value in using them or the portals are difficult to use and understand for average citizens. If citizens see no value in using the portals in their current form, it might be because a lack of content. “

**Other findings related to AT**

New Rules to improve e-government usage

In order to improve the usage of e-government options by citizens, there is need for a new set of Rules. Citizens need to examine (carefully think about their social norms and habits) regarding use of e-government and whether the current view is justified, particularly regarding their trust in technology. That is, they need to deliberate on whether they assume a view that technology can be trusted just as much as people can be trusted. The second Rule that needs to be adjusted is that citizens change their view or perceptions of technology in terms of value, cost and time. Citizens also have to shift their thinking towards their access to technology especially regarding cost, convenience and ease of use. Their shift in perspective is expected to result in the increased uptake of e-government services.

**Emerging theory**



**Figure 3:** Example of evolving conceptual model of e-readiness

**3.3 Case 2:**

Hence, AT as a lens and as a theory (together with Fogg Behaviour Model (FBM) (Fogg, 1999)) related to persuasive technology w in order to understand how a mobile application attempts to persuade and motivate High School learners to study mathematics on a mobile device after school. The advantage of using AT to understand a mobile learning environment is that it is able to depict learning as an activity, which is situated in a virtual space and socially mediated for extrinsically motivated learners, and this helps researchers to analyse

complex relationships. In AT, contradictions are an important concept that focus attention on the context and the design in mobile learning. Contradictions are regarded as sources of development and not as problems because they facilitate change. But this is not the only source of contradictions as will be seen in the discussion of this case study.

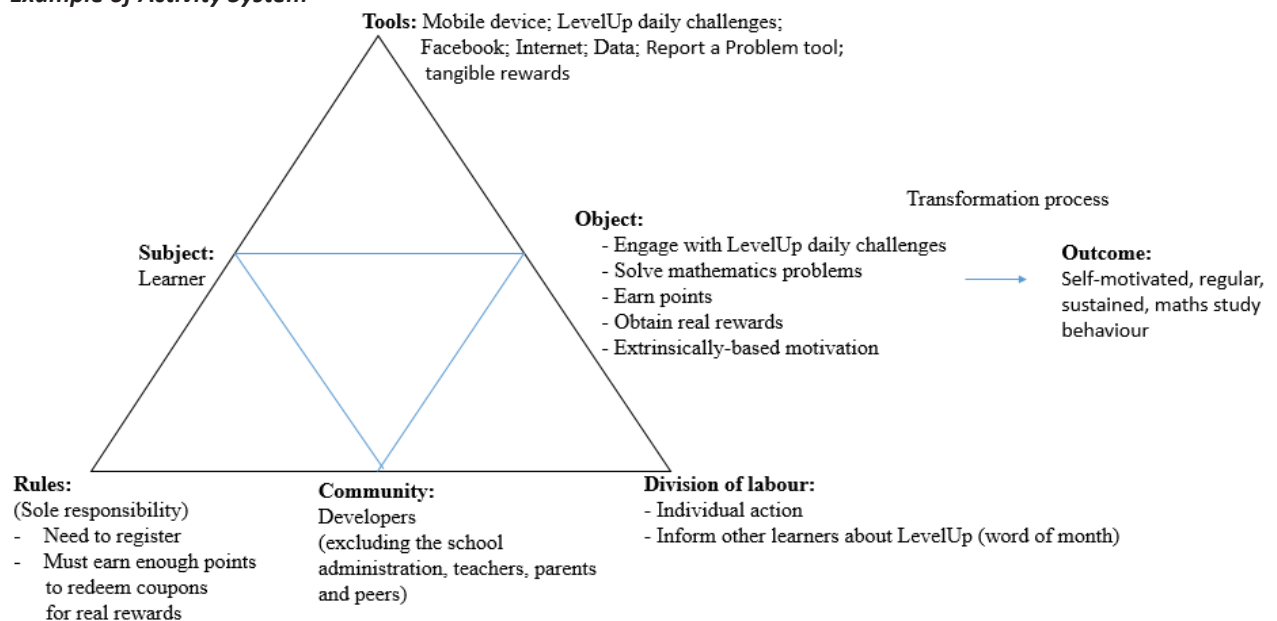
**Title:** “Towards Assessing Persuasive Mobile Technology for South African Learners Studying Mathematics”

**Research question:** How does the xxx application attempt to persuade and motivate the learners to study mathematics using a mobile device after school?

**Research approach:** The research strategy used is a single, interpretivist, explanatory case study. The choice of this case study, is that, not all persuasive technology attempts to address such complex behaviour. Hence, this case could be considered to be fairly extreme case and was selected both because of its perceived impact (a crucial case) and because of its complexity. For this inquiry, how xxx influenced learners’ motivation outside contact time was examined in terms of mathematics study behaviour. The interpretive research paradigm became relevant for the current study as it explores at how and why a phenomenon behaves in a particular manner. The use of a persuasive technology, namely xxx, by secondary school pupils from a single school was examined within the context of their socio-economic environment. This research study did not use a conceptual framework, but was exploratory and is therefore less structured. FBM was used initially but it was not considered to be a highly prescriptive positivist model. AT was not used for the research design, planning or interview protocol, but was used as a lens for analysis only (one of the activity systems is given in Figure 4).

**Data collection:** Four data gathering tools were adopted allowing for a triangulation strategy, namely, interviews, observation, qualitative questionnaires and data logs derived from xxx database. Two focus group interviews, a semi-structured questionnaire and observations were used for data gathering from 25 learners. Additional data was gathered from 9 application developers by means of one-on-one interviews and a semi-structured questionnaire. Data collection occurred between June and November 2016.

**Example of Activity System**



**Figure 4:** Learners’ activity system: Studying mathematics using xxx

**Data analysis:** First the data was organised into tables per research question and grouped into the developers' and the learners' perspectives. This was followed by an analysis of each table. The two perspectives were then combined to note the differences or contradictions (see Table 1). The second section used data from the observations and in order to understand the context and the behaviour of the learners in their natural setting after school as they went about their daily activities. Particular attention was given to how xxx attempts to persuade and motivate learners’ study behaviour on a mobile device. The data was then analysed using FBM and AT. FBM was used to determine the target behaviour and to look for reasons why the learners’ motivation might not be achieved when the xxx application is used. This was done by analysing the three elements of FBM

and linking them to the data collected from the two focus groups sessions with the learners and the data from the semi-structured questionnaire, as well as the data logs from the database.

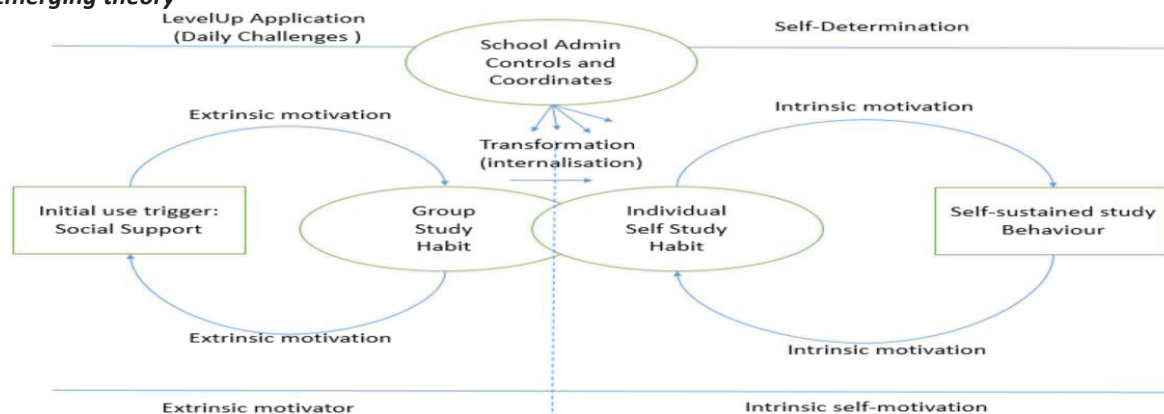
**Example of Analysis**

**Contradictions:**

**Table 1:** Example of the first contradiction and recommendations

Theme	Developers' Stated Perspective	Learners' Stated Perspective	Contradiction evident from observed actions	No.	Recommendations
Rewards as extrinsic motivation	... We have airtime which is pretty easy to get and data worth R100 where learners would have to do a few challenges more.	... why not study and also get short term rewards such as airtime or data in the process, ...Ja it will motivate you because there are rewards and as a teenager I would want airtime to call my girlfriend or something.	Design contradiction (use contradiction) rewards are not desirable. Section xx. Some learners did the challenges but did not redeem the rewards, this shows intrinsic motivation (Table nn). Rewards earned are used for calling friends, and possibly surfing the Internet and using other applications.	1	Recognition: Instead of real rewards, the xxx should leverage social support as a trigger to motivate and persuade the learners to self-study habit and subsequently self-sustained study behaviour. In addition to the individual daily challenges, xxx can provide the opportunities for learners to define their own teams and challenges. Set team goals, for example, 25 challenges per week

**Emerging theory**



**Figure 5:** Self-sustained study behaviour through social support

The researcher argued that, the persuasive educational application is seen as being a social actor. This is depicted to the left side of Figure 5 where social support serves as the trigger for initial use (and an extrinsic motivator), which involves group study to participate in the xxx application daily challenges. The middle of Figure 5 shows the involvement of the school administration, which enforces and coordinates the use of the application, the transformation of group study habit to individual self-study habit. The right side of Figure 5 depicts that the outcome from social support takes place over time to transform an extrinsically motivated study habit into a more independent individual, self-study habit and subsequently internalised to self-sustained study behaviour. It is important to note that changes in behaviour and culture happen over time.

**3.4 Case 3:**

**Title:** Information Security Management Framework for Mobile Money Systems In Uganda

**Research objective:** To develop an information security management framework that will help to minimize the identified information security management problems in mobile money systems in Uganda.

**Research approach:** This study adopted the interpretivist paradigm in order to explore the topic and get an in-depth understanding of the information security management problem in mobile money systems using Uganda as a case study. Data collection occurred between August and November 2017. Interviewing involved 3 IT managers; 3 legal managers; 3 security and compliance managers; 2 procurement managers; 2 internal



audit managers; 3 finance managers, 3 sales managers; 3 human resources managers and one procurement manager. Hence 23 people in total were interviewed from three separate mobile network operators.

**Activities:** This study also involves mobile money activities and use of technology (both of which are clearly activities) making it the most suitable to underpin the study.

### **3.5 Contribution of AT**

In Case 2, AT was used in conjunction with other topic related theories (it was used with the Fogg Behaviour Model (FBM) (Fogg, 1999)). However, as all three cases used the interpretivist paradigm, in no case was AT used in a restrictive way (it was used primarily as a lens and interview questions were not formulated in a way that clearly reflected the AT elements). As a result, the graphical depiction of an emerging theory as in Figure 3 (for Case 1) and Figure 5 (for Case 2) are not similar to activity systems.

The students had already recognised that their research questions did not fit well with a positivist epistemology, but were most familiar with technology adoption, diffusion and use theories, such as UTAUT, Diffusion of Innovations and Task Technology Fit and models that are primarily used in positivist research.

Their first instincts were to use those models and theories. A major advantage of AT, in the opinion of the supervisor of these three pieces of postgraduate research, was that it encouraged the students to design the research and also to look at their data in a fresh way. The recognition of technology adoption, diffusion and use as being processes which include activities and the search for contradictions in and between activity systems brought insights that cannot be easily obtained. Nevertheless, it was not essential to undertake a detailed longitudinal data collection exercise (although this is not excluded).

## **4. Conclusion**

An activity is made up of different elements which include the outcome, the object, the actors, the means of work or instruments and facilities, the means of communication and coordination, collective actors and the mode of operation (Korpela et al., 2002). The activity system acts as a conceptual framework AT is therefore a layered approach to analysing data, which breaks down the activity into different, equally important elements that in their own way contribute in turning the object into an outcome. As illustrated by the three examples, AT is applicable for exploring aspects of dynamic and complex activities. This conclusion is confirmed by Gleasure and Morgan (2018).

The primary strength of Activity Theory as a lens for analysis of qualitative data is its ability to highlight reasons for failure or disappointing performance as originating from contradictions either between different activities, between an earlier version of an activity and a later version as the activity evolves, or within an activity (between the elements of that activity). A further advantage is that the analytical process related to Activity Theory is fairly structured but nevertheless can produce insights that are not immediately obvious. This structure aids researchers who are uncertain how to analyse qualitative data effectively.

## **Acknowledgements**

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# Students' Perceptions of Knowledge Gained from Business Research Methods Course

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**Abstract:** In recent years, universities have been emphasizing the embedding of research activities and courses within their undergraduate programs, leading to better student employability. Research methods courses are equally important for all students, even those graduates who are not planning to conduct research in the future, because they still require making informed decisions regarding research findings as part of their professional development. Consequently most degree programmes now contain a research methodology component. However, according to research pioneers, students' perceptions of what research is, how it is carried out, and for what purpose, are the filters through which students are initially likely to perceive and, accordingly, engage both the context and the content of research. The main aim of the current study is to explore the perceptions of students towards research methods courses to facilitate the teaching/learning process and improve the interaction between instructors and students in ways that are meaningful to their own professional lives. This study contributes to the underline the best practice in teaching research methods relevant to the regional environment leading to higher student's employability. Additionally, student perceptions are indicative of the cultural background of a country, thus, being able to reorient the cultural beliefs around educational research would enhance learning engagements within the contexts of the study. 133 responds were received through SurveyMonkey. The findings revealed that though students are satisfied with the pedagogical teaching methods of the research methods course, they are not confident in becoming researchers or innovators. Accordingly, the study recommends to re-assess the research methodology courses from the point of view of employability; hence, allowing the course to be taught by those academic scholars who have substantial research experience. Moreover, it is recommended that the course should be taught in sequels since there is ample opportunity for students to learn from each level of research.

**Keywords:** Research; Research Methodology Course; Higher Education; Pedagogy; Knowledge; Bahrain

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## 1. Introduction

Research catalyzes positive change for the economic development of a country which will lead to investments and job opportunities, consequently leading to a high Gross National Product (GNP) by enhancing the system of governance and integrity (Al-Sartawi, 2018 and Al-Sartawi and Sanad, 2019). In recent years, higher education bodies have been emphasizing on embedding research activities within the undergraduate teaching activities leading to better student employability and enhance the future intellectual capital of their countries (Al-Sartawi 2018a and Al-Sartawi 2018 c). Consequently, universities in many countries are placing increasing emphasis on training students to conduct research, and most degree programmes now contain a research methodology component. Many are offering degrees in Social Science Research, as a field of expertise in its own right (Wagner et al., 2011). Research projects provide a wonderful active-learning experience that students typically embrace with increased motivation and interest (Ball and Pelco, 2006).

The completion of an introductory course in research methods is a critical step for undergraduate students who will one day need to conduct their own original research. These courses are equally important for students who are not planning to conduct research in the future, because graduates still need to make informed decisions regarding research findings as part of their professional development (Zablotsky, 2001).

Consequently, research methods courses are a staple and essential requirement of many undergraduate programs in the social and natural sciences (Ball and Pelco,2006).

According to Wagner et al., (2011), the theme relating to teaching research methods is surprisingly infrequent in the literature. At the undergraduate level, research methods courses are taught increasingly in Social Science degrees across the world (Parker, 2008). There have been some pedagogical research studies in Social Sciences at the postgraduate level on how students conceptualize research; however, there are few studies into how undergraduate students conceptualize research in Social Sciences although research has been done in other disciplines (Hosein and Rao, 2012). Based on Schofield and Burton (2011) undergraduate students' attitudes towards research methods before starting the course. However, Hosein and Rao (2012) argue that these opinions have been formed based on from feedback by course leaders rather than empirical studies of undergraduate students, which we believe is a limitation in the study and a gap in the literature.

The purpose of this research study is to better the understanding of student perceptions towards research methods courses to facilitate the teaching/learning process and improve the interaction between instructors and students in ways that are meaningful to their own professional lives. Additionally, student perceptions are indicative of the cultural background of a country, thus, being able to reorient the cultural beliefs around educational research would enhance learning engagements in Bahrain. Therefore, this research contributes to the literature by exploring the undergraduate business major student's perception of knowledge gained from business research methods course adopting a creative teaching approach applicable to the environment. Such a study could contribute to the underline the best practice in teaching research methods relevant to the regional environment leading to higher student's employability. In addition, this study offers a second contribution, by analyzing students' perspectives within a novel context and environment, the Kingdom of Bahrain.

## **2. Literature Review**

Since about the middle of the last century, there has been a prominence in the notion that education should focus on learning and not teaching. The earlier focus of education had been on the characteristics of a good teacher and successful teaching methods, while in recent years the focus has shifted towards the processes that result in successful learning. In the field of higher education studies, one result of this change has been the development of a small but vigorous body of research into students' conceptions of what they learn and how they learn (Kawulich et al., 2005).

Among the pioneers of research methods literature, Meyer et al. (2005) argue that students' conceptions of what research is, how it is carried out, and for what purpose, are the filters through which students are initially likely to perceive and, accordingly, engage both the context and the content of research. They further agree with Van Rossum and Schenck (1984), who examined the relationship between conceptions of learning and approaches to learning. They found that students with transformational conceptions of learning were more likely to adopt a more profound approach to learning than students with accumulative conceptions.

Furthermore, after reviewing the relevant literature, Ross et al. (2017) came to the conclusion that reaffirms the dominance of traditional approaches to teaching and learning methodology. This indicates that previous studies focused primarily on the logistics or outcomes of implementing teaching techniques without following how students and teachers conceptualize research in the context of learning.

Schutt et al. (1984) offered eight specific aims and benefits of offering research methods courses to students. These included helping students to: (1) understand the need for research in relation to the differences between mainstream perceptions and presentations of social issues; (2) differentiate between deductive and inductive reasoning and their related methods; (3) consider the critical importance of researcher ethics; (4) understand areas and challenges related to research including the collection, analysis, interpretation, and dissemination of data; (5) understand the limits of research in providing facts and the importance of considering researcher assumptions and biases, (6) consider reliability and validity; (7) differentiate between correlation and causation and the required methods; and finally (8) make, interpret, and critique claims about research generalizability.

Typically, in research methodology courses, students are exposed to a variety of different, even contradictory, ideas about what research entails, reflecting ongoing debates on the paradigms within the field of research methodology itself (Lather, 2006). Yet despite clearly outlined goals and benefits of research methods courses, students tend to hold persistent unfavorable attitudes toward research methods (Macheski et al. 2008), which

according to Sizemore and Lewandowski (2009) may become even more negative upon taking a research methods course.

A study by Daniel et al., (2018) revealed that students share a recognition that research methodology is a significant body of knowledge in education. However, there were noticeable differences in perspectives regarding what constitutes research methodology and whether or not it should be conceived as a discipline. To some students, learning research methodology is less of a discipline but rather an acquisition of a set of isolated facts and skills without necessarily acquiring a deeper understanding of research. Moreover, students reported that the key challenges they face in understanding research methodology include framing research questions, understanding the theory or literature and its role in shaping research outcomes, and difficulties in performing data analysis.

Sizemore and Lewandowski (2009) argue that the students' lack of interest toward research methods courses and their negative perception may be due to misunderstanding the goals and applications of research itself.

Similarly, Ross et al. (2017) state that as research methods course instructors, they had noticed that many students perceive research as something academic experts do and not something, they themselves might engage in through their daily professional and personal lives. Thus, many students assume that doing research is irrelevant to their professional experiences; an assumption which can undermine their motivation for learning.

On the other hand, Marek et al., (2004) believe that the main reason for such perceptions is the course instructor and their method of delivering the course. They elaborate on this point further by stating that any instructor who relies on a teaching approach based solely on a passive text-lecture-exam format runs the risk of driving student motivation and interest even lower. Many instructors realize this risk and include active-learning experiences in their research methods courses. Arguably the most popular active-learning experience in research methods courses is a student-developed research project. Nonetheless, Ni (2013) found that that student perception and performance as measured by grade is independent of the mode of instruction. Maier and Curtain (2005) relate this phenomenon to the self-efficacy theory, which posits that a belief in one's personal capabilities is central to how a person responds to tasks. Thus, by raising students' awareness and nurturing their skills, their negative perceptions could be mitigated.

As proposed by Jenkins et al. (2007), one of the strategies to improve the value of research in higher education institutions is by ensuring that universities manage the students' research experience particularly by raising their awareness regarding the employability elements of research. This is quite crucial for those students whose focus is on using a degree to get employment, and who may not otherwise appreciate the value of a research methods courses. Along similar lines, Ross et al. (2017) suggest the need to carry out more student-centered research in the domain of teaching inquiry, specifically in relation to scholarship focusing on the perspectives of students and on those students whose interaction with research is primarily as consumers rather than producers.

### **3. Methodology**

The research designs follow an exploratory research method, which tends to explore method for the collected data examination for describing the topic of the research. Exploratory research provides the accurate view of the situation as it happens in the real life. The exploratory research design mainly focuses on the use of quantitative approach that involves the statistical measures such as mean, and frequencies. Accordingly, the researchers developed a survey and distributed through SurveyMonkey to a random sample of students emails from different universities in Bahrain. The survey consisted of 18 statements, and used the Likert-scale which was deemed the most appropriate due to its popularity in gauging the perceptions of respondents. The survey is illustrated in table 2. The sample of the study included 133 students across nine different universities in the Kingdom of Bahrain. Cronbach's Alpha was conducted to ensure the reliability of the data collected. The result, 85, indicated that data collected is reliable.

### **4. Data Analysis and Discussion**

Table 1 displays the six demographics items of the questionnaire. According to Table 1's demographics summary, 9%% of the target population were Bahraini students of business higher education institutions from the total sample size of 133, with 68% females and 32% males (majority being the female gender for this study.

This was followed by the dominating age group of 21 – 23 years of age (i.e. 29% response rate) followed by 34 and older (20% response rate), 24-26 years of age (i.e. 15% response rate) followed by 18-20 years of age and lastly 31-33 years of age group. Furthermore, 92% of the majority of nationalities of the sample size were Bahrainis where 50% of the sample responded from Ahlia University, followed by 19% being other higher education institutions, followed by 17% responses from the University of Bahrain. Moreover, 37% (majority of responses) being 3.1-3.3 grade point average (GPA). Also, 57% majority of the sample expressed that they do not work while they are enrolled in the higher education system with majority (34% claiming that one or more than semester ago and all the sample reported that a full-professor designation faculty was teaching them the research methodology course.

**Table 1:** Demographics analysis

Characteristics		Freq.	%
In which country do you live now?	Australia	1	1
	Bahrain	126	95
	Egypt	2	2
	Saudi Arabia	2	2
	United Arab Emirates	2	2
	<b>Total</b>	<b>133</b>	<b>100</b>
What is your gender?	Female	90	68
	Male	43	32
	<b>Total</b>	<b>133</b>	<b>100</b>
What is your age?	18 to 20	11	8
	21 to 23	52	39
	24 to 26	20	15
	27 to 29	15	11
	31 to 33	8	6
	34 or older	27	20
	<b>Total</b>	<b>133</b>	<b>100</b>
What is your nationality?	Albania	1	1
	Bahrain	123	92
	Egypt	2	2
	Jordan	1	1
	Lebanon	2	2
	Pakistan	1	1
	Palestine	2	2
	Syrian Arab Republic	1	1
<b>Total</b>	<b>133</b>	<b>100</b>	
Select your current or graduated university?	Ahlia University	67	50
	AMA	7	5
	Bahrain Polytechnic	3	2
	Gulf University	1	1
	Kingdom University	2	2
	University of Bahrain	23	17
	Arab Open University	4	3
	UCB - University College of Bahrain	1	1
	Other (please specify)	25	19
<b>Total</b>	<b>133</b>	<b>100</b>	
What is or was your University Accumulative GPA?	Other (please specify)	4	3
	3.6 - 4.0	31	23
	3.1 - 3.5	49	37
	2.6 - 3.0	27	20
	2.1 - 2.5	15	11
	2.0 or below	7	5
<b>Total</b>	<b>133</b>	<b>100</b>	
Did you work during your study at the university?	Other (please specify)	6	5
	No I did not work during	76	57

Characteristics		Freq.	%
	my study		
	Yes, I did work as Part time Job	16	12
	Yes, I did work as full time Job	35	26
	<b>Total</b>	<b>133</b>	<b>100</b>
When did you register for a research methods class?	One Semester Age	45	34
	Two Semester Age	23	17
	Three Semester Age	20	15
	More than three Semester Age	45	34
	<b>Total</b>	<b>133</b>	<b>100</b>
What is the Academic Rank of the faculty taught you Research Course?	Assistance Professor	20	15
	Associate Professor	11	8
	Professor	62	47
	I do not Know the Rank of my Research Methods instructors	40	30
	<b>Total</b>	<b>133</b>	<b>100</b>

Table 2, on the other hand, illustrates the survey as well as the perception of students on the various aspects of their research methods course. As indicated by the table, item 1 of 18, claims that business gain the required knowledge to develop research in a research methods course. Such a claim was agreed by 62% of the sample, and strongly supported by 18% of the students' sample. However, 14% of the sample size had no opinion towards this claim; meaning that there remains a 14% probability for this course to facilitate its teaching-learning to improve the knowledge and confidence of students to be contributing scholars in the future economy of the Middle East. Item 2 of 18, claims that after completing the research methods course students are more interested in research activities. Such a claim was agreed by 50% of the sample, and strongly supported by 15% of the students' sample. However, 27% of the sample size had no opinion towards this claim; meaning that there remains a 35% probability (27% who had no opinion + 5+3% who disagree and strongly disagree with this claim) for this course to have its instructors inspire research skills in students so they will be able to become future innovators, in order to contribute to the Middle Eastern knowledge economy.

Additionally, item 3 of 18, claims that learners feel a sense of self-improvement after taking the research methods course. Such a claim was agreed by 53% of the sample, and strongly supported by 19% of the students' sample. However, 20% of the sample size had no opinion towards this claim; meaning that there remains a 29% probability (20% who had no opinion + 4% who disagree and strongly disagree with this claim) for this course to improve thatching-learning strategies of the course to inspire in students the need to innovate, and that is when students will be able to gain the sense of self-improvement, possibly through the self of greater self-directed learning. Item 4 of 18, claims that learners' research-conducting knowledge and skills have improved after enrolling in the research method course. Such a claim was agreed by 52% of the sample, and strongly supported by 19% of the students' sample. However 21% of the sample size had no opinion towards this claim; meaning that there remains a 29% probability (21% who had no opinion + 2% who disagree and strongly disagree with this claim) for this course confirming that teaching-learning strategies should inspire in learners the ability to conduct research with greater confidence.

Almost similar were the responses of items 5 – 9 of 18, claiming that enrolling in research methods course help students learn how to conduct and critique literature review, develop a questionnaire, collect sample data, organize research results and findings, as well as, the importance of such a course belongs to all professions.

Such responses shed new light to understand that students require more in-depth teachings of each of these skills independently. This also possibly means that taking a research methodology course in 1 term is not enough. Hence, in the future higher education institutions of the Middle East could plan to teach such a course in multiple sequels. For instance, this course could be taught in 3 courses: research methods 1, 2 and 3, where 1 only focuses on literature review and research gap identification as well as comprehension of the research

philosophy. Course 2 could focus on data analytics pertaining to different skill sets, like data analytics for management information or management students is different from those from the accounting or finance major. Items 10 - 18, claims that students are able to gain employability skill, critique research reported findings, build research careers, attain jobs in the field of data analytics or perform data analysis using SPSS and can conduct graduate research. Though >50% agree and strongly agree, on an average close to 40 – 45% of respondents express concerns that reflect their lack of confidence in becoming budding researchers. Such empirical findings confirm that though research methodology courses are a great initiation, the Middle East has a greater challenge to inspire learners to be self-directed learners and innovators by harness the know-how so to attain the important building blocks for becoming researchers, whether this is pertaining to applied or basic research.

**Table 2:** Perception of students on the various aspects of their research methods course

Statements	Percent%				
	S. Agree	Agree	Neutral	Disagree	S. Disagree
1. In business research methods course, students gain the required knowledge to develop research	18	62	14	4	2
2. Upon completing the research methods course, I become more interested in research activities	15	50	27	5	3
3. I have the feeling of self-improvement in the field of research	19	53	20	5	4
4. My knowledge and skills in conducting research has improved after taking research methods course	19	52	21	6	2
5. I have learned and gained the skills to perform literature reviews upon completing the course	17	59	14	5	4
6. I have learned and gained the skills to develop a questionnaire upon completing the course	17	56	20	5	2
7. I have learned in research methods course how to collect samples and analyze data statistically	17	59	14	9	2
8. I have enough knowledge of interpreting data and organize research results	14	56	21	9	1
9. I think that knowledge gained from research activities is useful to every professional	23	50	18	6	2
10. The knowledge gained from research activities enhance my employability skills and create job opportunities for me	20	45	28	5	2
11. I have gained the knowledge to evaluate and critique research reports.	15	45	27	10	3
12. I want to build up my future career through research activities	19	33	29	14	5
13. have learned and gained the skills to perform statistical analysis using SPSS Software	14	35	23	20	8
14. From my research class, I have gained the knowledge and skill to conduct graduating research	21	51	14	10	4
15. I understand the relationship between knowledge gain from research activities and market employability requirements.	19	33	33	12	3
16. I want to build up my future career through research activities	17	44	28	8	4
17. In my opinion research is mandatory for professional career	22	44	23	7	5
18. Research activates supports market employability requirements	17	46	28	6	4

## 5. Conclusion

The aim of this study was for academicians to understand the effect, or influence, of research methodology courses taught in Bahrain higher education institutions on its learners. Considering that Bahrain lags behind as a region with scant creativity it is important to comprehend the extent to which research methods courses are contributing to (1) the learners, (2) higher education institutions missing, and (2) the future needs of the Middle East to become creative knowledge-economy societies. The findings of this study's questionnaire revealed that though students are satisfied with the teachings of the research methods course, they are not confident in become researchers and innovators. This is not surprising. The course should be taught in sequels since there is ample for students to learn from each level of the research onion for a budding scholar. Further,



it is quite the time to assess this course from the point of view of its employability; hence to make the course taught especially by those academic scholars who have substantial research experience. Or else a novice academician or scholar cannot do justice to this course.

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# Observing from our own “Cultural Window”: Presenting Autoethnographic Narratives from Tourism to Music

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**Abstract:** According to the literature students have difficulty in publishing academic autoethnographic stories, and it is our objective to provide advice in order to change this. Autoethnography is a qualitative research approach which is self-reflective and which seeks to address social issues with which the author comes into contact. This study is about the experience of the authors and one personal experience in the study focuses on a holiday trip to Australia, in 2017, and on certain events that warranted documenting during that trip, including events that took place with locals. Another (very different) personal experience involves the reflections of a concert violinist and his teachings. How may one avoid injury in violin players right from the outset of the learning process? What is the role of the equipment used? An objective of the study is to get major research publications to view autoethnography with different eyes. Brainstorming sessions were held in Master’s degree and PhD classes on research methodology to help shed light on this issue and the results show that students are interested in autoethnography and do consider it a worthwhile academic research endeavor. An alternative of course is to do traditional research, as one set of reviewers for a journal stated to the lead author, involving questionnaires and interviews and focus groups. What is argued, however, is that an enriching personal experience is worth communicating and understanding, in depth, and in more theoretical terms, if it is seen to benefit communities at large and if lessons may be learned. Academia may have some trouble in making autoethnography a mainstream method, as some authors have stated. Looking at events as an outsider, from our own “cultural window”, from a different context, and narrating what one observes to be different, is essential if one wants to publish worthwhile autoethnographic research accounts. Autoethnography questions cultural assumptions, behaviours and values. Note that specific target audiences should be considered as what is normal in one environment may not be in the next, and here lies the power of autoethnography – in its being able to capture the difference.

**Keywords:** novelty, academia, subjective experience, research, practical contribution, autoethnographic research

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## 1. Introduction

We seek herein to provoke a discussion on alternative research methods in business and management. Taking a stance very distant from more “academic”, complex statistical (positivist) research methods, autoethnography as a form of expression reveals more creativity which is not necessarily a bad thing in the age of artificial intelligence – and where there is much discussion on robots and on machines taking on the [more repetitive and straightforward] jobs of human beings.

Academia needs to connect more to reality rather than remaining distant from real-life occurrences. Autoethnography is seen to be suitable as a pointer to future, more in-depth research. The value of observations of attentive researchers should not be simply discarded for being “unscientific”, as one set of anonymous journal reviewers told the lead author of this article not so long ago. An objective of this article is to gain more support for the autoethnographic method. It must be said, however, that a search on the Web of Science database with the search term “autoethnography”, reported over 1500 papers, and also showed an upward trend in the number of citations in the last 5 years. Which is seen to be very positive.

As Mason stated (2002, p.1): “Qualitative researching is exciting and important. It is a highly rewarding activity because it engages us with things that matter, in ways that matter.” Thus, autoethnography should be considered a valid avenue for research as it explores the social world and everyday life and “the ways that social processes, institutions, discourses or relationships work, and the significance of the meanings that they generate” (Mason, 2002, p.1). Autoethnographers need to be talented, self-reflexive storytellers with acute literary skills (Davies, McGregor and Horan, 2019). Researchers must accomplish this without being egocentric.

Brainstorming sessions were held in Master’s degree and PhD classes on research methodology to help shed light on this issue and students showed a genuine interest in autoethnography and in specific experiences shared by the lead author. Images with rich cultural content were shown, taken during a holiday trip, which

shed light on religious traditions very distant from those existing in Western Europe, albeit with technology bringing us closer in many ways (Figure 1). Autoethnography was thus considered a very worthwhile academic research endeavor, indeed a true “window” to the world.



**Figure 1:** A mix between new technology and traditional attire in Istanbul, Turkey

The article proceeds with a look at some of the literature on research methods and autoethnography, followed by autoethnographic accounts and more “academic” commentary. We end with some conclusions related to our study.

## **2. A look at the literature on research methods and autoethnography**

Nowadays, in academia, performing research is a major duty of lecturers; in particular if career advancement is an ambition. However, not only should higher education lecturers publish, but graduate students should publish also. The latter, involving publishing by students, is, indeed, an objective decided at the highest level and by those who govern academia – the publishing of new knowledge in peer review outlets is a major part of modern education involving graduate students.

According to Remenyi (2017, p.189), research is “an intellectual activity in which a question is attempted to be answered [...] a formal procedure [where there is] the collection of data or evidence, the analysis of the data and the reaching of a conclusion thereof”. Research is closely linked to theory. According to Saunders and Lewis (2018, p.111) “theory is broadly defined as an explanation of the relationship between two or more concepts or variables. The role of theory will loom large in your study, as all research projects will need to link to theory in some way”. Autoethnography, on the other hand, is “a narrative account written in a reflexive manner which relates the detailed experiences of the researcher to the wider context of his or her environment. It is a relatively new approach to academic research which at present would only be accepted by a small community of scholars” (Remenyi, 2017, p.16).

It is also relevant to state that “observation is regarded as the central platform on which research designs such as participant-observer works as well as on which action research and ethnographic studies are based [...] Observation refers to data acquired that is not obtained as a direct response to a question asked by a researcher” (Remenyi, 2013, p.197). Observation plays a central role in autoethnographic studies. The author must (often passively) observe interactions which involve him/her, or not, in situations deemed of importance and relevance to readers and researchers. What is to be considered relevant and important? For the purpose of this study, any problem which, when resolved, may lead to improved quality of life and to the advancement of local communities and society at large, is deemed important and worth observing and theorizing on.

What are ethnographic studies? “Ethnography is concerned with understanding [and learning from] another way of life from the perspective of those pursuing that way of life” (Saunders and Lewis, 2018, p.124) and is thus linked to anthropology. Ethnography, occurring as field research, tends to be based on less formal data (e.g. observation) as compared to interviews or focus groups, for example (Remenyi, 2013). Researchers who observe see, feel, hear, smell and/or taste. According to Remenyi (2013, p.197), “observation data which is properly recorded can be a useful source of understanding and should be regarded as a potential source of important data”.

Ethnography is further defined in Remenyi (2017, p.75) as “a qualitative research approach which requires the researcher to become familiar with the lived experiences of the research subject(s).” Autoethnography is slightly different as it is a narrative / story told in the first person (Ohito, 2019).

An abductive approach, very suitable to autoethnography, is an “approach to theory development involving the collection of data to explore a phenomenon, identify themes and explain patterns, to generate a new – or modify an existing – theory which is subsequently tested” (Saunders, Lewis, and Thornhill, 2016, p.710).

Davies, McGregor and Horan (2019, p.201) state that autoethnography (as performed in doctorates in business administration) should have “personal, practical and scholarly impacts”. Albeit, they recognize that such experiential knowledge and reflections are “not widely disseminated in well ranked academic journal articles” (Davies, McGregor and Horan, 2019, p.201). As a consequence, “the academic potential of students is lost (Davies, McGregor and Horan, 2019, p.211).

An example of autoethnography and of a self-reflexive story is found in Ohito (2019, p.251): “The story peaks hours earlier, in the middle of the morning. I am standing – feet planted and arms akimbo – in Room 208 on the second floor of Armstrong Middle School, which is located in the Bronzeville neighborhood.” The scene is set for an emotional racial encounter between Andrew, a black student, and Jason, a white pre-teacher. The storyteller, a tutor-teacher, is also black in this critical autoethnographic study linking “whiteness, pedagogy, and urban teacher education” (Ohito, 2019, p.250). The well-articulated narrative could well have been taken from a novel rather than from a scientific paper, if it were not for the theory meticulously inserted in the text.

“Words fail both Jason and me. The loudness of the loaded silence stuns us. [...] The lesson this morning, which focuses on the history of the KKK [Ku Klux Klan], has been planned and executed by Jason. By the end of the lesson, Jason, Andrew, and I are stalled along the emotionally bumpy road on which teaching and learning occurs.” (Ohito, 2019, p.251). The reader feels the environment, watching on, as if peering in from a perhaps distant cultural window, at scenes where children, marginalized by racism, interact in a learning environment. The research is presented as a puzzle, gentling unfolding as one becomes immersed in the story. Is such a narrative within the reach of all researchers? It is a challenge, certainly.

### **3. Auto-ethnographic accounts and subsequent theorizing on the subjects discussed**

A number of situations have occurred to the authors and are narrated below. These are situations that the authors intuitively saw to be of interest to readers and researchers. Following the description of the event, some theorizing is included in the study.

#### **3.1 The costs of tourism and “Tourist-haters”**

While on holiday, even in the kindest of places (and Australia is seen to be very kind), one will always and invariably run into people who are “tourist haters” (an add-on to “people haters”). Tourists, including from an increasingly affluent and mobile Asia (from Malaysia and China, for example), tend to be noisy and pushy, in their enthusiasm, and a major discomfort for certain “touristy” zones where citizens and residents are trying to

get on with their day-to-day lives. Busy tourist areas tend to be more expensive, due to the demand of tourists being so high. Therefore, yes, tourists send prices up (including of real estate) and make life more difficult for local residents. Tourists also cause more traffic and longer queues, including for taxis and local transport which local residents may use regularly. Tourist haters will generally not be of help. For example, if you ask for directions from one such an individual, he or she may very well send you in the opposite direction to where you want to go. This following situation happened to the lead author, in Sydney, Australia, in early August 2017:

“Lead author: “Which way to the Town Hall train station please?”.

Individual in workers’ overalls: “Back that way, and turn left, and follow the street down [gesticulating]”.

Lead author: “But we just came from there, and we were told to come down this way, to the end of the shopping mall! Are you sure?”.

Individual in workers’ overalls: “Yes, I am sure. No, you cannot go that way. I work here every day and I go to that train station myself! [hurrying off].”

The lead author, before heading back, double-checked the directions with a lady working at a booth. She confirmed that in fact the right way was to go down to the end of the shopping mall (actually now only 50 metres away), which led into the Town Hall train station directly. These correct directions had been given by the waitress at the restaurant where the lead author and his family had had lunch. Doubt had appeared as the path to be followed was a little longer than at first imagined (this tends to happen in much larger countries than where we have our homes – and where distances are seen in a different perspective). Thus the query with the worker gentleman, who gave the wrong indications entirely.

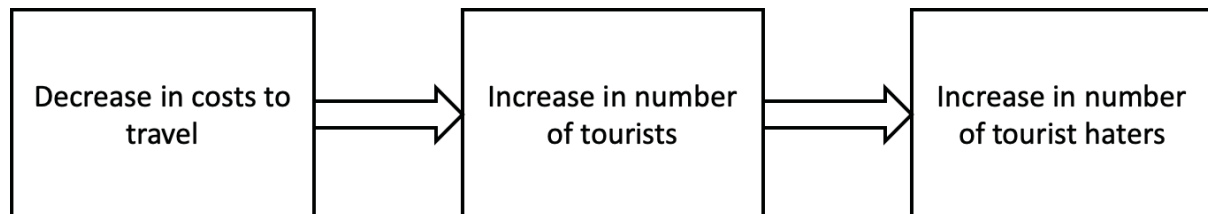
Another situation occurred while actually on the train, shortly afterwards. The lead author was with his two young daughters (aged nine and twelve years of age, at the time) and they were sitting comfortably and relaxed on a train about half full (there were vacant seats all around). An older lady came onto the train and abruptly chastised and was rude to one of the lead author’s daughters for occupying “her” seat – destined for less mobile individuals. “Get up, get up, get off!” she gesticulated. Indeed, the newcomer to the train seemed energized by this seeming lack of respect! My youngest daughter was surprised and frightened by the gestures, and quickly vacated her seat, taking another seat just adjacent to that one. A local and also older lady, sitting opposite, defended my daughter saying to the other lady “You gave her no chance to stand up, I am sure she would have shown her good manners and would have given you the seat, if she had been given the time! [winking at the lead author and father]”. However, as a local Australian citizen later explained, if there are vacant seats then a priority seat may be taken by a normally mobile person – only if there are no vacant seats should that specific seat be given up. We were not at fault but, however, experienced first-hand the frustration of a local older lady.

As it turned out, the older lady who had complained (quite aggressively) did not suffer from a lack of mobility at all. Getting off at the same train stop she quickly pushed ahead of the individuals already standing in line for the escalator (including the lead author and his two daughters), taking a route outside of the queue, and overtaking people who were patiently waiting for the escalator. A true “tourist hater”, possibly a “people hater”. The lead author felt compelled and indeed did tell the lady that she had to queue up like everyone else. The older lady took no notice. This incident occurred right after having experienced the worker gentleman giving the wrong directions to the train station. It is expected that, as air travel and lodging become more accessible and economical, more and more situations like this will occur, as more and more people will be travelling, to the annoyance of locals. Let it be noted that the lead author had a large Nikon camera in his hands, on the train, easily identifying him as a tourist, in an era when smartphone cameras have ruined the camera market (only a keen tourist will carry a large camera around, which tends to be too heavy and cumbersome for everyday use).

Luckily tourist haters are still in a very small minority, including in Australia, and numerous well-wishers are to be found for each of the former.

### 3.2 Discussion of the case involving the costs of tourism and “tourist-haters”

Cultures tend to change very slowly. Indeed, “cultures, especially national cultures, are extremely stable over time” (Hofstede, 2001, p.34). Culture is defined as a way of “thinking and social action that exist among members” (Hofstede, 2001, p.xix) of a group or nation. Our proposition for culture change is as follows, in figure 1. Decreasing costs to travel (with the existence of low cost carriers such as Ryanair and Easyjet, as well as due to the existence of Airbnb and others making lodging more accessible; as is Uber also making travel cheaper in a number of geographical locations) will increase the number of tourists worldwide and lead also to an increase in the number of tourist haters. We propose that this phenomenon be researched more in depth, namely how it is possibly rising across nations around the globe.



**Figure 1:** Decreasing costs to travel will increase the number of tourists worldwide and lead also to an increase in the number of tourist haters

### 3.3 Teaching young musicians to play the violin in a correct ergonomic way

The progress of a young student has been remarkable, as this collaborative autoethnographic piece shows – whereby two researchers come together “to report on their shared personal experiences” (McGregor and Fernández, 2019, p.229). In a very short period of time a pre-adolescent has jumped two international violin levels. This has occurred due to a superior motivation level, in this case, and also due to a passion for music, which the student has. Also very essential is the environment in which the student is growing up in, namely her mother is also very passionate about music and insists on regular (daily) and prolonged practice. The two co-authors of this article have been collaborating in a doctoral research project focusing on the correct placing of the left hand on the violin, in order to avoid injuries later on in one’s career, and both have coached this student. The objective is to produce students with a healthy technique, who may play over a long career, injury-free (Silva et al., 2018; Silva et al., 2019). In this particular case being discussed, irrespective of natural talent and of motivation, the student was not able to correct the position of her left hand on the violin, despite the insistency by the second author. This led to another conclusion, as the second author was convinced, due to prior research (Silva et al., 2018; Silva et al., 2019 ), that the position of the left hand was of utmost importance. It was thus decided to invest more in equipment, namely to change violin, from a half size violin to a full-size violin. Thankfully, the [family] funds to do so existed. The student had grown a lot and a new violin would make her stretch more and very naturally produce a more correct positioning of the left hand.

Being a right-handed player the left hand takes on many different positions, in order to play on four different strings, involving specific positions and techniques, including holding up the violin. The right hand only holds the violin bow and so is generally injury-free.

The solution, based on the objective to have a correct position of the left hand, proved to be successful. Within a matter of minutes the very much sought after objective was attained. This proved the research done to date to be correct. That a correct position of the left hand on the violin was imperative to progress and if incorrect then something structural may be occurring and require attention (please see figures 2 and 3, involving the second author).

### 3.4 The success of the violin player

The success of a violin player (SV) and musician is seen to be the result of five factors: natural talent (NT), motivation (M), family network (FN), infrastructure (IS) and financial capital (FC) (see also Oliveira, 1993):

$$SV = f \{ NT, M, FN, IS, FC \}$$

The importance of the family network, infrastructure and financial capital may have been downplayed somewhat in the literature (Oliveira, 1993) as one may argue, for example, that with the right motivation most ambitions may be achieved. This, however, is not the case. In the absence of the necessary financial capital and backup – in terms of family environment – success will be compromised. Former [young and] very

talented and motivated students have given up music due to the divorce of their parents. A solid and supporting family unit makes for the best in terms of healthy musical development. The right equipment is also a necessary supplement to the above. Natural talent will thus only take you so far, and is a factor amongst five factors which will determine one's success. Note that in close-knit Catholic cultures family takes on added value and perspective; the extended family is also important – those close friends and network who have a profound effect on results and outcomes achieved. Motivation is also important but can also only guarantee results to a certain point. We thus propose the further development of previous research on what leads to the success of the individual (Mansfield and Oliveira, 1994, 1995).



**Figures 2 and 3:** Incorrect position of the left hand (first picture) versus the correct position (second picture) when playing the violin

Experience as a teacher has led to the realization that motivation is not enough. Nor is natural talent. Extremely talented individuals without the necessary motivation will fail in the sense that they will probably stop playing altogether, in the long-run. Success is thus very susceptible to at least the five factors named above, in this study.

### **3.5 Local stories and the precious knowledge of tour guides**

Paying extra money for a tour is probably, in most cases, a good option. In one such case, in Queensland, Northern Australia, the lead author and his family opted to go on a tour (in 2017) into the Daintree rainforest (near Port Douglas), said to be the oldest rainforest in the world. Though at the hotel reception the receptionist had said to go alone, to save money (as our family had rented a car), this advice was not taken.

The main reason for booking the tour was that the lead author had heard of tourists being eaten by estuarine crocodiles in the area (also known as salt water crocodiles, as they swim beyond the rivers, into the sea, thus catching badly informed tourists off guard). These crocodiles are very large, much larger than freshwater crocodiles. Indeed, an estuarine crocodile can get to weigh over a ton. They are very aggressive, and eat anything, and have been around since before the dinosaurs, having perfected their ambushing technique.

Indeed, the Daintree tour guide only took the lead author and his family to places where there were no crocodiles, in what was, for the most part, a crocodile inhabited area. The following situation occurred at the river side in the heart of the Daintree rainforest:

Tour guide: "You can swim here. It is very nice."

Lead author: "Are there no crocodiles here?"

Tour guide: "No, there are no crocodiles here, as the water is too cold."

Lead author: "May we also swim over there, down river, beyond those rocks?"

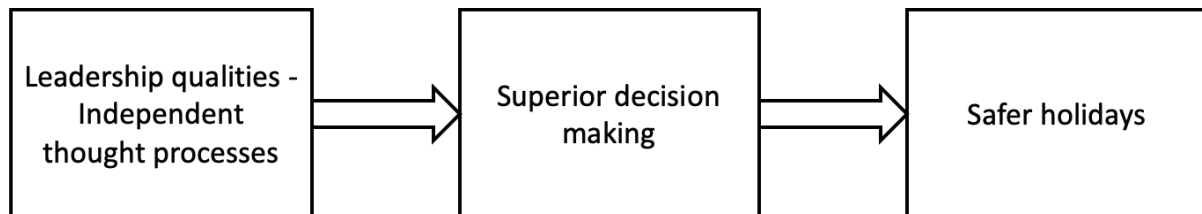
Tour guide: "No, because there are crocodiles there".

So, the lead author and his family actually swam in the river, at a place where the water was too cold for crocodiles. It was truly beautiful, the water was very clear, and many fish could be seen swimming in the water. A truly memorable experience.

It could have been a disaster though, had we, without the right knowledge, chosen to bathe elsewhere in the river.

### **3.6 The importance of an independent mental attitude**

The importance of an independent mental attitude and independent thought processes – possibly close to a definition of leadership in so far as leaders are seen to think for themselves – is paramount and may mean the difference between life and death (figure 2). Tales of tourists being eaten by crocodiles – for having taken a swim in the wrong location – abound (Pearlman, 2016). Leadership qualities – with leadership defined as involving leading people to better futures (King and Lawley, 2016) – may thus be essential to staying alive and surviving, even when on holiday and apparently far from harm's way. More such research on leadership outside the organizational setting is seen to be beneficial.



**Figure 2:** Leadership qualities may be essential to us staying alive outside our day-to-day environment

As concerns the following passages of text, how might one theorize around them to build publishable autoethnographic narratives?

### **3.7 The Sydney Opera House**

During a more urban tour guide, to the Sydney Opera House (which has over one thousand rooms and 300 corridors; and is a UNESCO World Heritage Centre and symbol of Australia), also in early August 2017, the lead author and his family learned of how the brilliant architect, who was its creator, from Copenhagen (Denmark), Jørn Utzon, was such a perfectionist, that the projected three years for the building of the Opera House turned into 15 years. This was also due to the fact that the original architectural project had not been passed by an engineer, to see if it was even possible:

"The architect of Sydney Opera House, Jørn Utzon was a relatively unknown 38-year old Dane in January 1957 when his entry was announced winner of the international competition to design a 'national opera house' for Sydney's Bennelong Point. His vision for a sculptural, curved building on the Harbour broke radically with the



cube and rectangular shapes of modernist architecture. The building transformed his career and, in turn, transformed the image of an entire nation.” (sydneyoperahouse.com, no date).

Furthermore, it took 107 million dollars to build the Sydney Opera House, which was way above the initial projection and budget of 7 million dollars. Jorn Utzon worked on his project from 1958 to 1966, the year he left, when no longer welcome on the project, only to never return to see his masterpiece (based on a sphere, or on an orange he had eaten) when finished. The architect Jorn Utzon was not invited to the opening of the Sydney Opera House, in 1973, a ceremony led by Queen Elizabeth of England.

Politics and internal fighting is to be found everywhere, though one may not be aware of it unless given local knowledge. When invited back, to do some refurbishing at the Sydney Opera House, Jorn Utzon, aged 80 years at the time, refused to come, stating it was too far to travel. Was this the real reason?

“In 2003, the same year the Opera House celebrated its 30th birthday, Jørn Utzon was awarded the Pritzker Prize for Architecture, the highest award in its field. In 2007 the Sydney Opera House was formally recognised as one of the most outstanding places on Earth with its inclusion on the UNESCO World Heritage List under the World Heritage Convention.” (sydneyoperahouse.com, no date).

### 3.8 Ayers Rock and the native Aboriginals

Finally, of note is how in Australia there is currently apparently great respect for Aboriginal culture, tradition and values. While at Ayers Rock, in Uluru, for example, the tour guides would not allow tourists to photograph certain sacred Aboriginal places. At Uluru the Aboriginal influence on the Natural Park was indicated by a 66% say versus local government’s lesser 33% weight in what happens there. We also saw no one climbing the rock, which has been a subject of dispute in the past (Haines, 2016). However, the relationship has not always been a smooth one and “local indigenous communities claim they receive a fraction of the tourism revenue from Uluru, which is leased by them to the federal government.” (Haines, 2016). Are native Aboriginals that well-treated by white Australians? We became very much aware of the existing tension when in Australia and learning of local stories which may only rarely reach an international audience.

### 3.9 On the richness of locals’ knowledge

The richness of the locals’ knowledge was amazing and even though the lead author considers himself to be well-read nothing would have led to the discoveries made first-hand if the physical trip had not occurred in the first place. Thus, those who may predict that immersive technological experiences may replace physical tourism trips may be mistaken (figure 3). An experience on Facebook versus a real encounter is also very different.

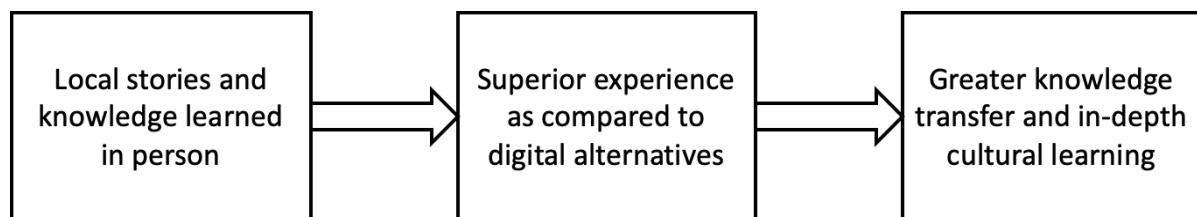


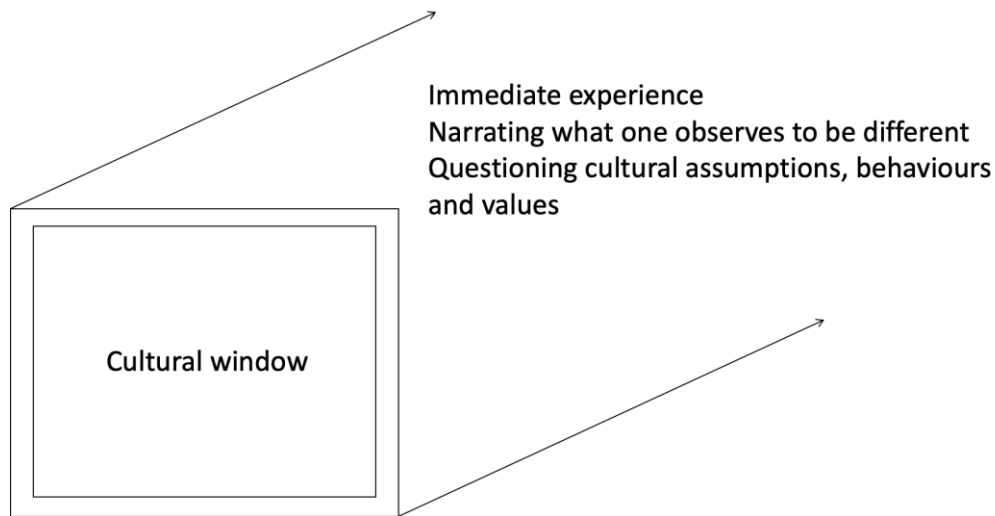
Figure 3: Technology may not in fact be able to replace the richness of encounters with locals during holiday trips

## 4. Conclusions

We have discussed herein some personal experiences by the authors in light of a research methodology called autoethnography, which is increasing in its popularity. Interest by students is high in experiences told first-hand by those who experienced them and so, in an age where we are battling for the attention of our students, with rivals often being digital forms of expression and communication (Au-Yong-Oliveira et al., 2015, 2018), autoethnography is seen to be a very positive form of research.

One has to peer at one’s immediate experience as if from a unique “cultural window” (figure 4), while considering what would be deemed very different to our day-to-day cultural context. In proceeding thus, a valid autoethnographic research account may be created, for a specific target audience. Dangers of

autoethnography include being “navel gazing, confessional, overindulgent and sensational like reality TV diaries” (Davies, McGregor and Horan, 2019, p.211).



**Figure 4:** Autoethnography – peering from a unique “cultural window”

Some of the stories told involve a holiday trip to Australia. Some of these stories have important lessons to be learned and which may be important for survival, but that certainly are important from a cultural standpoint.

During a visit to the Australian Museum, in mid-August 2017, one could read the following statement, placed on a wall: “Dangerous Australians – There are about 120,000 deaths in Australia each year. On average, you can count all the people killed by snakes, crocs and sharks on one hand. So is our dangerous reputation really fair?” In effect, by doing what the locals suggested, and by following signs about dangerous animals in the wild, we had a safe journey and holiday. However, other less attentive tourists may not claim the same.

Another story is about success as a musician, namely about success as a violin player. Previous research on the correct positioning of the left hand, as a part of ongoing doctoral studies, at the time of writing, reveal themselves to be true in so far as technique and health go hand-in-hand. Success, however, may be more complex than what previous studies have predicted. More variables may in fact be involved in what is a complex process.

We have thus lain down the foundations for future research, following our exploratory effort. And it is here that we see lies the value of autoethnography. In picking up on clues in the environment noticed by attentive researchers. And what could be of more value than that?

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# Organization Research Using Design-oriented Research Methods: Case Study on a Holonic Based Crisis Communication Protocol

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**Abstract:** The most important criticism regarding organization research based on social science methods consists of the big gap between what is interesting from scientific point of view and what is required in practice. In the paper, we argue for an applied research methodology to be used in organization research. Namely, we propose a combined method between design science research and mixed research methods from social sciences. The paper intends to offer an example of a multidisciplinary investigation related to the topic of crisis management of organizations. Our goal was not to solve a particular problem at a given organization but to contribute to the scientific body of knowledge. During the research we had to deal with some theoretical and practical issues of different research fields. Each of these fields has its own research methodologies, but the suggested topic can be scientifically investigated only using a holistic, transdisciplinary approach. Our research, as a case study, might be an argument for new approaches in organization studies and research. In this particular case, we decided to use design science research together with mixed – quantitative and qualitative- social science methods. The results show that in the case of transdisciplinary topic design science research is applicable. In the paper we briefly present the evolution of the holonic concept from social sciences through engineering applications back to the organization studies. As case study, we show a holonic crisis management research where a methodology taken from the scientific body knowledge of an applied science (computer sciences, software engineering) is applied into the totally different scientific environment of organization research and Public Relations. The basic idea of the research comes from the supposition that the machine –machine (software to software) communication algorithms, developed in computer sciences, might be applicable for human-human communication during crises, and the successful way how the holonic manufacturing concept handles disturbances in manufacturing processes might be applicable for other unpredictable situations in the organization.

**Keywords:** design research science, mixed methods, holonic concept, communication protocols, crisis communication

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## 1. Introduction

The study of organization behaviour is definitively a social science research topic. The mainstream organization research is based on science and the humanities. (Roome, 2003) Roome states, that science helps us to understand organized systems, and the humanities contribute to understand the experience of actors inside organized practices. Lately, the social science approach of the organization research, especially for the entrepreneurship research, received severe criticism. Either the lack of qualitative methods, either the lack of theoretical approaches is presented. Neergaard and Ulhøi in (Neergaard & Ulhøi, 2007) show that the research in entrepreneurship has been descriptive in nature, and empirical research has predominantly been based on doubtful standard structured surveys. Kevin Hindle urges a greater use of qualitative methods in the entrepreneurial scientific literature and points out a scarcity and a stunning lack of variety of these methods compared to other social sciences (Hindle, 2004). Bhattacharjee, shows, that social science methods operate primarily at the empirical level of research, (how to make and analyse observations) and very little is directly pertinent to the theoretical level, which is really the more challenging part of scientific research.

(Bhattacharjee,2012). The most important criticism regarding organization research based on social science methods consists of the big gap between what is interesting from scientific point of view and what is required in practice. One of the alternatives for the above mentioned weakness represents the design science perspective, an approach that is more close to the applied sciences, and may help to fill the gaps between research and practice.

The latest achievements in Computer Sciences and Information Systems, domains where design science excels, bring artefacts that may augment the social science approach. In Information Systems research there are two main directions (behavioural science and design science) sometimes with uncompromising boundaries.



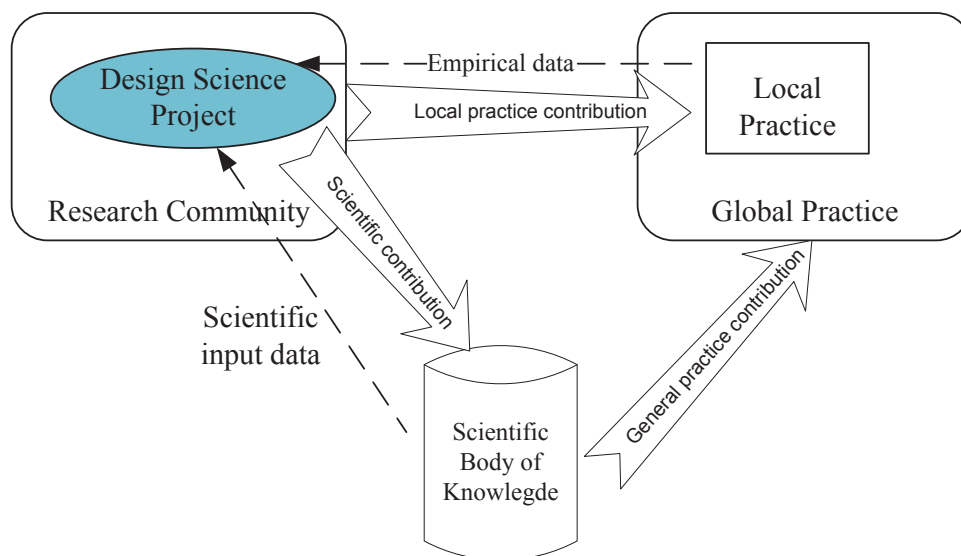
Same to the applied sciences, as engineering or medicine, the design oriented research shall be more extensively used in organization research. The practice of business organizations requires scientifically tested solutions for their problems. The proper research method for such kind of inquiry shall be the design oriented research.

One of our last arguments for the design science approach is that it can be related to some of the new trends in organization research. Let us mention the Evidence-Based Management (EBMgt) concept, an emerging management movement and organization research topic. (Aken & Romme, 2012). EBMgt is a family of approaches that support decision making (Briner et al.,2009). Same to design based research the Evidence-based management seems to provide the needed model to guide the closing of the research-practice gap. (Rouseau, 2006)

In spite of the fact that the design science is mostly associated with computers and information systems, it is getting more of a social sciences discipline than it is related to computer sciences. It needs to take in account issues like beliefs, maturity, policies, culture, motivation and so on, notions that are not really familiar to formal scientists. That is the reason, why design oriented researches became one of the most reasonable and practical approaches to human-computer integration studies.

In our subjective perspective the quality of a scientific research in management science shall be measured how, or in what extent, the results can be used by others in the future. In this approach the inquiries based on design science have the advantage that always there is contribution at least at local level.

Figure 2 shows how a design science research project use empirical data from a local practice, and shows how this data will generate contribution to the body of knowledge, and general practice contribution.

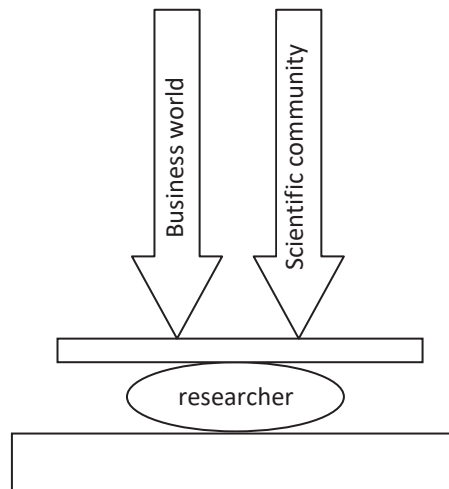


**Figure 2:** Design science research and its contributions (adapted from Goldkuhl, 2012)

The figure illustrates that the design science research projects shall have as input data both the empirical data collected by the researchers and from the scientific body of knowledge as well. Same to any other scientific research method the design project must be built on scientific body of knowledge and at the end must contribute to it. The contributions have, as we can see on the figure, both practical and theoretical nature. The project, and its findings, shall fit to the requirements and standards built by the research community and also by the global practice. Design science projects must exceed the level of making artefacts for local businesses. If the developed artefact does not have a generalized applicability and does not have a contribution to the body of knowledge, it means the research did not achieve its goal. In order to achieve high standards in design research science there might be two main strategies according to livari. (livari, 2004). The first strategy means that the researcher starts to build a generic artefact for a general problem, and later tries to apply it for local issues. The second strategy starts from a specific problem, and later, from the experience gained there will be

a prescriptive general knowledge. In this second case the generalization will happen only after the project is finished and tested at a larger scale.

In design research project, much more than in the case of other applied researches, there is strong local involvement. The researcher must take in consideration two different fields of interest into account (**figure 3**): the pressure for fulfilling the standards and expectations of the research community and also the pragmatic demands of the business world. This pressure may raise several ethical, financial and pragmatic issues, but it is out of the scope of the paper to deal with these issues. We are more than relieved that during the following



case study we did not had to face any limitations regarding the freedom of design coming from the studied organizations. The only concern of the studied organizations were related the confidentiality of their data.

**Figure 3:** Pressure on the researcher in the applied researches

### **3. A transdisciplinary research as case study for design research approach. The HCC research project**

In the previous paragraph we presented that the scientific body of knowledge of management science can grow if the research community of this field might use some investigation methods from applied sciences. Starting from local empirical data researchers can create generally applicable knowledge, based on solutions developed by Engineering or Information Systems. Usually there are created research projects, and later, the findings are generalized. In these projects the focus is not necessarily is on proving the validation and the interpretation of the input data, but on the effectiveness on the results.

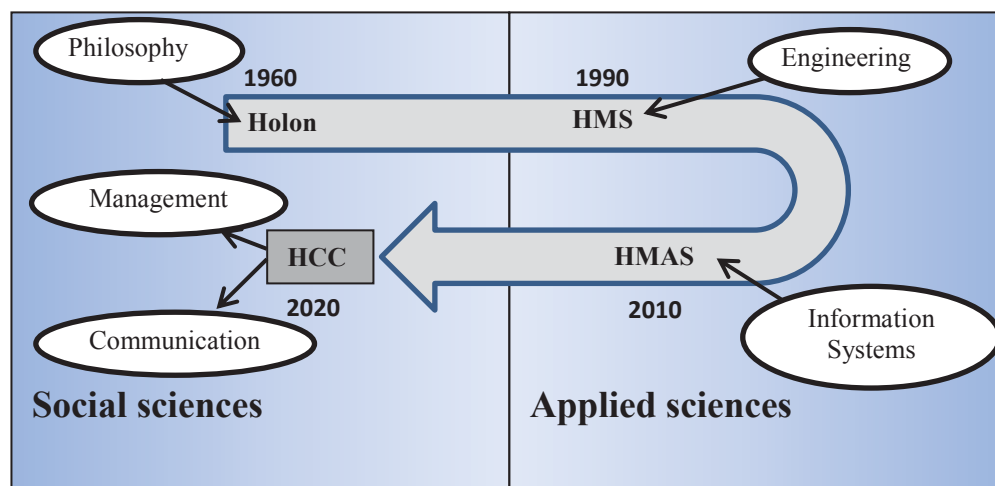
Our example is a research done for business organizations. The topic, how to handle efficiently crisis situations in organizations, is obviously an organization research topic. The main objective of our research consists of creating a crisis management model based on a specific multi-agent approach taken from software engineering. By the study we intended to call attention to the trans-disciplinary approach required by this topic.

We decided to use as research method a design based research. The main drawback of this decision was that in organization research this type of inquiry is not really usual. Being a man-machine communication study, it was suitable to choose a common method in information system research. As first step, we decided to create an artefact based on the holonic-multi agent system (HMAS) concept. This concept has its roots in social sciences; a fact worth to explore.

The concept of the holon (an entity that is a part and a whole at the same time) was coined by Arthur Koestler, a British-Hungarian novelist in (Koestler, 1967), being influenced by the Nobel-prize winner Herbert Simon. Koestler, beside many other activities, was interested in scientific activities. He had close connections with several top scientist of his time, however he never been accepted within the mainstream of science. In the spite of this fact, we cannot ignore that Koestler published over 30 non-fiction books at the border between science and philosophy. Koesler's "holon" was the starting point for the Holonic Manufacturing System (HMS) concept, developed in the early/mid-nineties by a group engineers as a promising solution for the challenges of manufacturing of the new century (Babiceanu, 2006). Later the holonic concept evolved from

manufacturing and automation to software engineering and information systems. The Holonic Multi-Agent System (HMAS) approach today represents a reference direction in the agent oriented software engineering. The HMAS concept seems to evolve outside of the engineering world and lately several non-industrial applications were developed (Valckenaers & Van Brussel 2015). Among the multiple fields where the holonic concept might be implemented, we just mention the smart grids, public health and public transportation. To these basically non industrial fields we'd like to add our holonic crisis communication (HCC) protocol designed for industrial organizations. The HCC can be placed, as scientific research topic, among Management and Communication sciences. This way, the holonic concept after a few decade loop in applied sciences might arrive back to the field of the social sciences.

In figure 4 we present how the holonic concept evolved from social sciences through technical sciences way back to social sciences.



**Figure 4:** The trans-disciplinary evolution of the holonic concept

The novelty of our concept briefly consists of developing a crisis communication model at the organization level based on the HMAS approach (Holonic Multi-Agent System). We will not explain in detail neither the advantages of the holonic concept, nor the results of the research. The reader interested in the developed model may find a detailed presentation in (Bakos&Dumitrașcu, 2017) and (Bakos & Dumitrașcu, 2018) Here, we'd like to focus on the transdisciplinary character of the research, and show the challenges met in the research design phase.

During the research we had to deal with the theoretical and practical issues of multiple scientific fields. While Risk and Crisis management, Crisis Communication and Public Relations belong to the social sciences, the Automation Engineering, Software Engineering and Information Systems are applied sciences. Each of these fields has its own research methodologies and the academic community expects results accordingly.

At the end of this paragraph we must mention an interesting fact that motivated us in designing this interdisciplinary research: we realized that both the holonic concept and the design research approach in organization research can be almost directly linked to the Nobel Prize winner economist Herbert Simon. The watchmaker parable from *The Architecture of Complexity* (Simon, 1962) gave the inspiration to Arthur Koestler to coin the concepts of holon and holarchy (Koestler, 1967). Simon's other reference work, *The Sciences of the Artificial* (Simon, 1996) was one of the starting points for Romme and Van Aken to argue for the design approach in organization studies. (Romme, 2003).

#### 4. Research design and methodology

Crisis management and crisis communication mostly means to handle not only the unexpected, but sometimes the unpredictable too. The modern risk management techniques try to assess and mitigate as many categories of risks as the evaluators can imagine. If something is still missed, the unpredicted situation can lead into a crisis. In our research we study how businesses face, and how should face, crisis situations. We focus mostly on man-machine communication, how they efficiently might handle high impact issues that they previously tried to avoid, or they never experienced before.



We see organizations as complex systems, where lately the emergent behaviour is even more unpredictable than few decades ago, because of the man-machine intelligent interactions. Emergent behaviour means that the behaviour of the entire system is unpredictable, even if we can describe the behaviour of its components. It is obvious that during crises the emergent, unpredictable behaviour of the system is amplified, the behaviour of certain components may cause fatal damages for the entire system. In these situations the reaction must be quick, accurate and must minimize the material and reputational losses. In the Internet of Things era the quality of the reaction hinges at the same time on the quality of human resources, the quality of the technical devices and the quality of the connectivity among the compounding elements.

The basic idea of the research comes from the following suppositions:

1. the successful way how the HMS manufacturing concept handles disturbances in manufacturing processes might be applicable for other unpredictable situations in the organization.
2. the machine –machine (software to software) communication algorithms, developed in computer sciences, might be applicable for human-human communication during crises

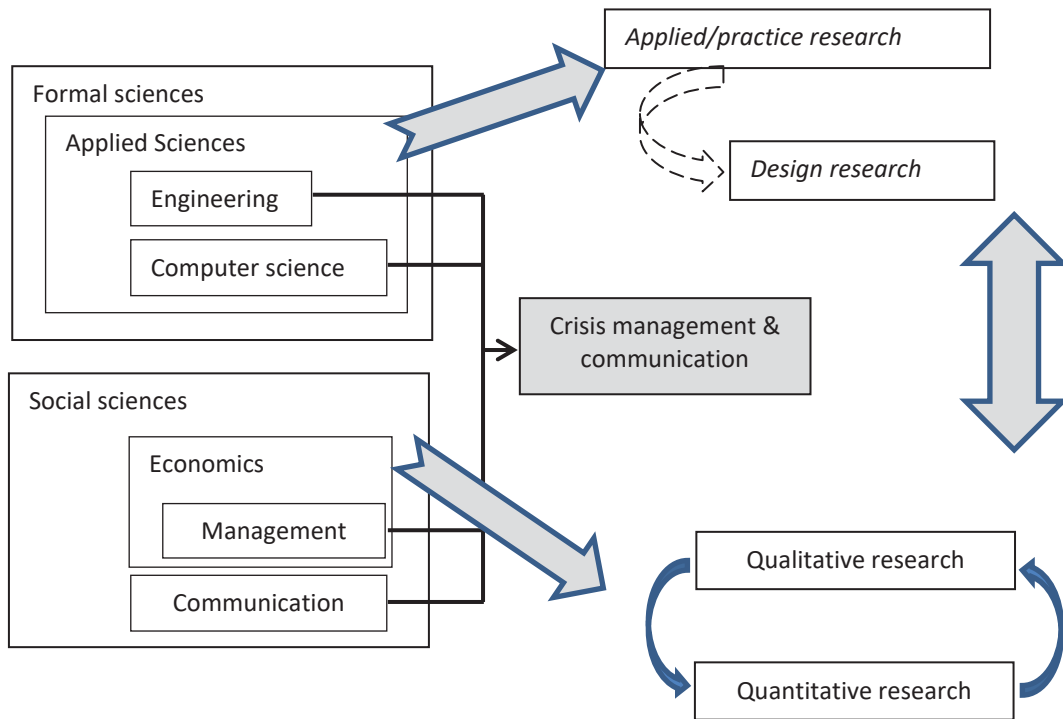
Essentially, we intend to extend a manufacturing disturbance handling algorithm and process planning concept to a higher level, to the level of the whole organization and beyond that.

From the beginning we had no doubts that the research is scientifically challenging and the findings will be useful for real organizations. But we had serious uncertainties about what research methods might be used, and these shall be designed in order to sustain/prove to results in front of the research communities of different sciences.

Computer science professionals, software engineers, very often, find solutions and design artefacts for problems defined by others. In order to do that they simplify the complexity of the reality and find fair-enough solutions. The computer science developed its solutions and methods to model the behaviour of complex systems. This fact was the starting point of our inquiry.

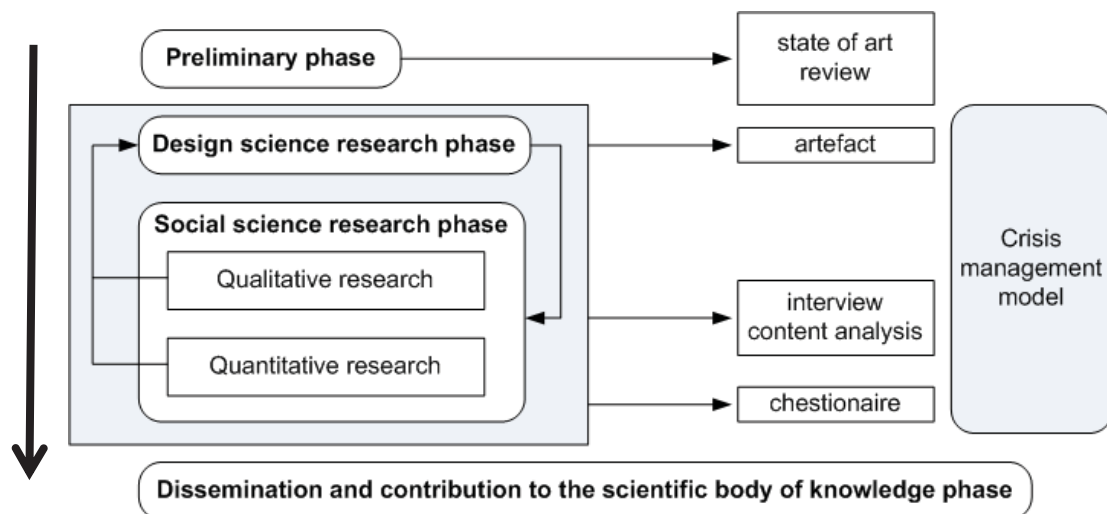
We assumed that the way how software engineers solve unforeseen situations in machine-machine communications, the same algorithms can be used in crisis situations in man-machine and man-man communications as well. We assumed that in the era of Internet of Things, human-human communication can be upgraded during crises if we use the same communication patterns regardless if computers or humans are involved. As we can see on **figure 2.2** the proposed topic has its roots in applied sciences (computer science) where applied research represents the basic research method. On the other hand, the goal of the research is to bring contributions to the performances of social organizations (companies) by better management and communications methods. This field is dominated by social science, usually by quantitative methods.

It is very important to point out that the idea came first, and just after that –during the research design phase we had the first contacts with business organizations. Actually, we searched organizations to solve some of their problems about what they might not even know. This way we succeed to make partnerships with few companies from a detached perspective.



**Figure 5:** Research topic and research method definition

Our second dilemma in choosing the right methods is related to the fact that our research is partially a fundamental research and partially an applied research. We have here a fundamental research because involves conducting research that contributes to general knowledge, knowledge that is expressed in the form of statements, models, concepts and theories. Research can be considered fundamental when claims about a particular phenomenon are valid and reliable for all situations and/or cases. (see Jonker & Pennink, 2010). On the other hand our research is more likely an applied research. It engenders data, insights, methods, concepts and views. It strives, as any applied research, to obtain knowledge about a particular issue in the organisation and to contribute to the improvement of that issue leading to problem solving. (Jonker & Pennink, 2010). In spite of this fact, our research is not intended to be applicable for a specific organisational or managerial problem nor for a particular organization. Our goal is to generate scientific knowledge generally applicable accepted by the research community. Thus, the relevance of the results is an important issue. That is the reason why, beside a design science research approach later we have chosen mixed methods for our investigation in order to prove that we add something to the body of knowledge of more scientific fields. This way we tried to follow the particular research rules of those sciences, too. In figure 6 we depict the main



phases of the research.

**Figure 6:** Stages of the research

The qualitative research (interviews and content analysis) was done almost simultaneously with the design science research. The developed artefact -a holonic based crisis communication model- was influenced by the preliminary results of the qualitative research. At the same time also the qualitative research has as input data the findings of the research process done for creating the preliminary communication model. Both research methods, the qualitative research and the design science research, were done using the steps presented in scientific body of knowledge of these methods. The unusual approach here was that we tried to do the researches in parallel. This supposed certain degree of flexibility and an evolving methodological design, but without breaking the standards that are applicable in a well-conducted qualitative research, as were defined for example in (Creswell, 2014). Both designs were made after the preliminary research phase that included a state of the art review of the selected topic. The difficulty of this preliminary phase consisted of the literature review and practice of the following topics crisis management (management science), crisis communication (communication science), disturbance handling in manufacturing control (engineering), application of holonic multi-agent systems in non-industrial environments (software engineering and information systems) and other related fields.

Later, after the qualitative research and design science phase ended we had a quantitative phase, too. This phase is related to our wish to be scientifically right. Taking in account that our goal was to create something scientifically valuable, we intended to “defend” the results in front of any academic forum. Thus, we wanted to be sure that the work was done enough accurately. Technically with this step we went back to the original phase of the research when we defined the objectives. By the quantitative research we refined our input data using 130 questionnaires. The quantitative method provides further data to improve de developed crisis management model, this way the qualitative research had a significant contribution not only to understand and investigate the present and define the research objectives, but also improved the final results.

## **5. Conclusions and discussions**

During our journey in developing a crisis handling communication protocol, we used investigation methods taken from manufacturing design and software engineering and used qualitative and quantitative research methods from social sciences. The paper tries to give arguments for the business environment researchers for a paradigm shift from social sciences to applied science methods.

In the paper we presented some challenges we met when we tried to shift from a software engineering research topic to the field of organization science. This kind of approach brings several scientific dilemmas. Even if from the beginning there were no doubts that the research is scientifically challenging, it was particularly demanding to find the proper scientific research method. The mixed research methods used had to deliver the answers to the research questions, but at the same time they should sustain/prove these results in front of the expectations of different research communities from different sciences.

While social science researches mostly focuses on human and organizational behaviour design science researches create artefacts and applications which contribute both to the theory and the practice of the management science. Many of social science researches cease after they perceive patterns, weaknesses and imperfections of real organizations. Among the conclusions of these studies certainly there are some suggestions for improvement, but usually the real implementation in practice many times is left as future work. Design science research has an opposite flow. The first results can be seen at local practice level, and just later, if the artefact proves its efficiency can be constructed a theory on the results.

If the goal of the researcher is to contribute to global practice and to the body of the knowledge of management science, -and there is no doubt about the relevance of the results and the independence of researcher-, the method should be considered as scientific method as any other generally accepted inquiry method. It can be an effective scientific tool in finding solutions for many theoretical and practical problems yet known in management science.

In conclusion, we argue that design science and design-oriented research should be accepted in organization research as an equal and complementary scientific research tool, same as the commonly used qualitative and quantitative methods. Same to other applied sciences, as engineering or medicine.

Design science projects must exceed the level of making artefacts for local businesses. If the developed artefact does not have a generalized applicability and does not have contribution to the general body of knowledge, it means that the research did not achieve its goal. The developed artefacts during the design science research projects shall fit to the requirements and standards built by the research community and also by the global practice. This way the contributions shall have practical and theoretical nature, as well.

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# A Fish out of Water: A Case of Qualitative Methods for Computing

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**Abstract:** There has been much criticism amongst researchers about the applicability and appropriateness of research methods for any particular study. The criticism of research methods between multiple supervisors of different philosophical perspectives contributes to the student confusion on what research method to use. The discourse on research methods is so vast, with experts promoting mostly the use of their own-mastered methods. Leading their students towards that which they have tried and tested. The purpose of this paper is to outline our experiences as emerging researchers, applying qualitative techniques in computer-science research. Computer science is traditionally a quantitative field of study. However, the work is transdisciplinary and the technology has become ubiquitous in our lives. Developing a better understanding of people's perspectives on the technology and understanding the technology is important. In this study, we use a qualitative autoethnography research method with a case study, to reflect on our journeys as qualitative researchers in a predominantly quantitative environment. This reflection is important for researchers because they should use the research tools, which are appropriate for the research objectives and environment.

**Keywords:** research methods, qualitative research, reflective research, research methodology, social research

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## 1. Introduction and Problem Statement

We have observed that in the computer science field, most researchers tend to take a positivist philosophy and gravitate towards quantitative research methods. In doing so, many have shunned the use of qualitative research methods in computer science, information systems and computing related fields. As emerging researchers, we would periodically consult established researchers on which methods to use, and they would start engaging in a lengthy debate. The lengthy debate which would be concluded by some or another notification of their next activity or engagement; indicating that they were interested to carry on with the discussion, should the interruption not have happened.

Qualitative methods in the computing space have been discriminated against as non-technical, non-empirical and hence belonging to the social sciences (Albarracin, et al, 2001). Ironically, those conducting the so-called empirical studies have over the years, borrowed many theories from the social sciences (Fishbein, 2007). These theories include behavioural and learning theories (Ajzen, 2002; Bell, Maeng and Binns, 2013).

Behavioural theories such as Bandura's self-efficacy theory as well as fishbein's theory of reasoned action (Bandura and Adams, 1977; Fishbein, 1979; Albarracin, et al, 2001; Fishbein, 2007). Some learning theory examples are the collaborative learning theory by Vygotsky's and the situated learning theory (Vygotsky, 1978; Bell, Maeng and Binns 2013).

The problem is that, by only paying attention to those research methods that the researchers have previously been exposed to; computing researchers run the risk of stereotyping qualitative methods as not being suitable for computing research without investigating them in more detail to get an understanding of the method applicability and functions. It would benefit researchers to invest in understanding the available research methods as well as the advantages and disadvantages of applying these methods, before overlooking them.

### 1.1 Research Method Selection

In our observation and reflective experience in the practice of choosing research methods, there is a predisposition to use quantitative research methods for computing research, as they are perceived to be the more suitable, relevant and appropriate research methods for the empirical nature of the research. The practice therefore extends to the area of student supervision. It has become an observed innate common practice for supervisors of postgraduate students to indoctrinate their students with the supervisor's preferred research methods. As a student, one is subjected to the research methods that their supervisor is familiar with, as part of his/her expertise and competencies.

It is therefore incumbent on the student to find out the research area of the potential supervisor and to read the potential supervisor's published work in order to find out what research methods they prefer. Thereafter, the student should decide if those are their own preferred research methods to apply in their study. At the very least, the student should decide if they are willing to learn and adjust to the supervisor's research methods or keep to alternative methods as backed by plausible methodological reasons.

In the best-case scenario, the student would strictly adhere to the philosophical perceptions of their supervisor. The more research projects that a researcher has conducted using a particular research method; the more confident, skilled and comfortable the researcher is in applying that specific research method.

Therefore, it is most likely that a researcher will propose that a research study be conducted using their preferred research methodology. A researcher is also most likely to prefer research methods in which they are most competent.

Reflectively, as a student, one may not be sufficiently skilled in research methods based on the amount and type of research that they have previously conducted. For this reason, some students might have to adjust and delineate their research according to the proficiency of their supervisor in a specific research method.

Although supervisors should approach the choice of research methods as a form of scientific discourse requiring rigor and relevance. The repeated use of a certain selection of research methods would gravitate the researcher towards only those methods as a familiar and comfortable area of practice. With researchers having preferred research methods, the situation could lead them to neglect the use of the remaining available selection. Subsequently there could be some applicable research methods in their area of research, which they might have not paid any attention or even tried.

We have observed in over two decades of combined research experience that students would shy away from qualitative research methods even if the methods were suitable to answer their research questions; to an extent where they would even alter the research questions of their study to suit the research methods of their supervisor's skillset. This process would occur, almost like that of a research family legacy where the supervisor had inherited the skillset from his/her supervisor and passed on through several supervisor generations. Similar to that of skills and family recipes, consistently passed on from one generation to another.

At times, when a researcher is not sure which research methods to use, they may choose to triangulate methods by using both qualitative and quantitative methods. The combined use of the research methods is referred to as the mixed method of research (Creswell, 2015; Singh, 2016; Bryman, 2016; Brannen, 2017).

### **1.2 Qualitative research Benefits**

Qualitative research can be viewed as a process of paying attention to, observing and reporting on an understanding of concepts that occur in everyday life (Silverman, 2007; Creswell, 2015). It is essential for those who are active practitioners in higher education to keep making efforts to reflect on their own research practices and experiences (Rich, 2015). Silverman (2007) posits that as you think about your research methods, you should consider the things that you do and those that you anticipate doing in the near future. Qualitative research helps us conceptualise ourselves in our multiple identities of existence, such as student, parent, sibling, mentor and supervisor (Rapley and Seale, 2004; Silverman, 2007; Singh, 2016).

### **1.3 The Case of Emerging Researchers**

The criticism of research methods between supervisors and different philosophical perspectives give rise to the student confusion on what research method to use, how to go about choosing or justifying their chosen research methods. It is common practice for students to attend conferences in order to consult different experts in their field of study. Meanwhile, the discourse on research methods is so vast, that the experts tend to promote the use of their own-mastered methods and discourage the use of those that they are not familiar with. Each expert would be leading the students towards those methods, which he or she finds to be comfortable. We have experienced similar instances where as a student; you could be left with more questions than answers after a discussion about research methods. The confusion levels depends on how passionate the expert would have been in discussing their school of thought.

We have observed that not knowing which research methods to use could negatively affect the student confidence in their ability to execute their studies successfully, leaving them prone to scope creep and prolonged study period.

We also observed that as researchers navigate between the novice student phase and the emerging researcher phase, they face the challenge of deciding on their preferred epistemology and related research methods. The emerging researchers often find themselves asking the questions of, "Who am I as a researcher? In addition, for how long do I have to remain loyal to that epistemology? Can I change my views of the world and how I think that knowledge is constructed? Am I applying the best research method for my chosen study?" The element of self-doubt creeps in and emerging researchers would find themselves trying out multiple research methods, in order to find and define their niche area. In such a scenario, the researcher could be seen to be lacking focus. Hence, the topic of research methods becomes a daunting one for emerging researchers.

As my one supervisor would say:

*"For every research method, some swear by it and others swear at it"- (Buthelezi, Van Der Poll and Ochola, 2016).*

#### **1.4 Knowledge construction**

According to Klopper and Lubbe, (2012) research begins with a level of ignorance towards the area of research. They introduce four levels of knowledge competencies as Unconscious Incompetence, Conscious Incompetence, Conscious Competence, and Unconscious Competence. They posit that our knowledge competence changes into the different phases as we get to know more about the area of inquiry and even more as we practice the skills acquired in that knowledge area. Klopper and Lubbe, (2012) describe the competence phases as follows:

- Unconscious Incompetence: a state of being unaware of a how a concept works and its domains of applicability. This is a state of oblivion, and not knowing what it is that you do not know.
- Conscious Incompetence: this phase has some enlightenment, where one is aware of that which they do not know more about, which can be known.
- Conscious Competence: getting the theoretical understanding of a concept and how it is applicable, without having tested its practicality.
- Unconscious Competence: reaching the expert level of a concept such that one can effortlessly reason about the concept seamlessly.

The competence phases were first coined by Martin Broadwell, (1969) as, "the four level of teaching", and developed over time to the representation by Klopper and Lubbe, (2012).

Researchers would be aiming to transcend from the state of conscious incompetence to the level of unconscious competence in their knowledge and use of research methods. At the unconscious competence level, the researcher can already determine the research method, the required:

- type of data to be collected,
- data collection tools; as well as the
- data analysis tools necessary to execute their intended study.

## **2. Research Methodology**

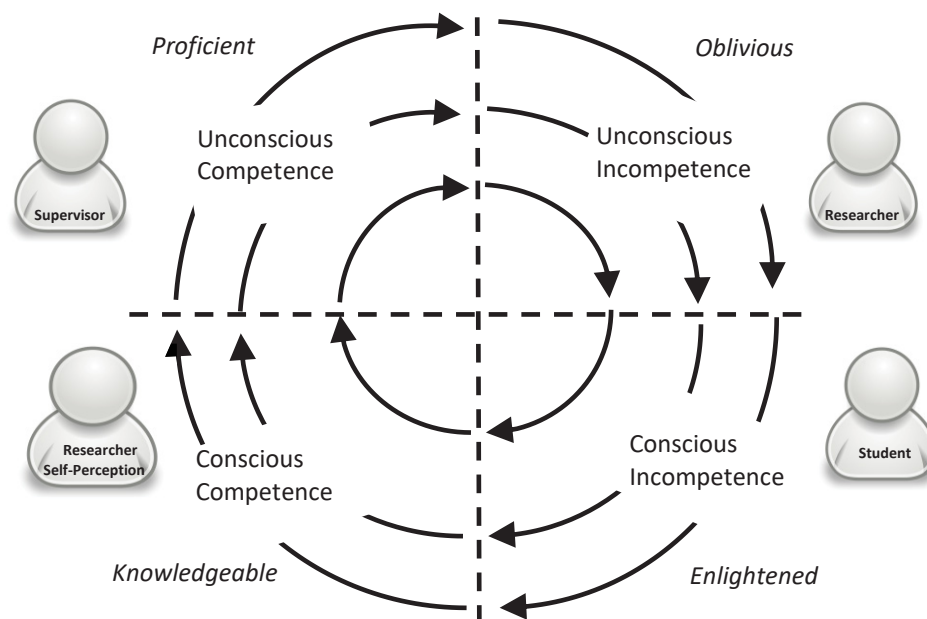
The research problem in this article is the question of what research methods are appropriate in the field of computing research. Specifically, whether qualitative research methods are appropriate in computing? The purpose of this paper is to outline our experiences as emerging researchers, applying qualitative techniques in a computer science research project. A qualitative study was conducted, in order to execute the research. An autoethnography qualitative research method was used for conducting this study. The autoethnography method enables the researcher to write reflectively about their personal experiences of a societal phenomenon (Wall, 2006; Chang, 2016). Autoethnography puts an emphasis on the personal and cultural aspects of the researcher, in the research process (Spry, 2001; Butz and Besio, 2009). This theoretical method of investigation is used to give a personal account of individual experiences using a personal narrative (Spry, 2001; Chang, 2016).

Although the chosen research method was autoethnography, we struggled to use the personal pronouns in presenting the content. The unconscious competence tone of scholarly writing quickly took over the research article as we documented our experiences (Klopper and Lubbe, 2012). It took multiple iterations to revise and change the document so that the use of autoethnography is evident. The experience of writing this text has indicated our conscious incompetence to write in first person within our text. We were holding back and applying the third person writing style, which is generally accepted for academic papers.

### 3. Research Findings and Results

The supervisor might have reached the *unconscious competence* phase of knowledge competency levels. Which is the highest level of knowledge acquisition and usage, as depicted in the top left quadrant of Figure 1.

Meanwhile the student could only be at the *conscious incompetence* phase, in the bottom right quadrant of Figure 1. Which means that the student would be aware that they have limited knowledge of the research methods, which are necessary for their studies. The supervisor and the student would find themselves on opposite sides of the knowledge competency wheel.



**Figure 1:** Reflective research journey (Synthesised by researchers as derived from Klopper and Lubbe, 2012)

Similarly, some computing researchers could be plotted in the top right quadrant of being oblivious towards qualitative research methods. Therefore exhibiting *unconscious incompetence* towards qualitative research methods for computing. Finding themselves at the lowest level of knowledge competencies. Whereas they could perceive themselves to be *consciously competent*; with the view that qualitative methods are not suitable for computing research.

### 4. Discussion and Conclusion

The researchers presented their experiences and observations on the use of qualitative methods in computing. They presented the case of postgraduate research students and the respective supervisors, including how the students could be choosing their research methods. Research methods are a key skill in the academic space.

Possessing an in depth understanding about the applicability of research methods is essential in order to effectively execute research projects. This skill is also necessary to skilfully undertake postgraduate studies and skilfully follow the research process. Knowing the available research methods and their benefits can be equated to knowing the best tool to complete a task. Therefore, empowering the researcher to conduct well-informed studies which are objective and in nature.



Literature on research methods points us towards the answer to our research question (Silverman, 2007; Creswell, 2015; Bryman, 2016; Brannen, 2017). The appropriate research methods to use in the computing field of research are those that answer the research question in the most plausible manner. Similar to any other research field, the chosen research method should be appropriate for investigating the research question given the empirical research context where the phenomena of interest presents itself. Supervisors should be aware of and know a starting list of research literature resources to help guide their students in the process of choosing research methods.

Further research could be conducted into the actual use of research methods and the level of knowledge by those using the methods, as plotted against the knowledge competencies wheel. The more we conduct research, the better we become at it. As with all other things in life, practice makes experts. The more we use qualitative methods in computing, the better we understand their relevance and applicability. It remains important for researchers to be aware of the research methods that they know very little about. I.e. they should reach *conscious incompetence*, become better informed, and move toward the *conscious competence* state of knowledge competency.

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# Trends in Methodologies of Published Articles: Implications for Management and Business Scholars

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**Abstract:** In a global context of declining productivity growth and declining returns to research as well as to research and development, academic research methodologies are under increasing pressure to deliver societally important research outputs. Whereas most disciplines have a delimited, or generally circumscribed theory base that they draw on, management theory necessarily draws on multidisciplinary, or indeed transdisciplinary, frameworks. This paper seeks to identify the core debates in certain of the latest articles published at the forefront of the field of research innovation, from its leading journal. It seeks to build on the conversations in these articles, by juxtaposing their topics and methodologies against certain theoretical propositions derived from novel theory. In so doing, the conceptual distance of the front line of the field from the radical front line of theory in the field is quantified. Methodological implications are discussed and recommendations are made for business and management theory and practice.

**Keywords:** Research methodology; quantitative; qualitative; trends in the use of scientific methodologies

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## 1. Introduction

Effective research governance, or management, is necessary in order to ensure scientific research is sufficiently responsive to societal needs. According to Wallace & Ràfols (2018, 1975):

A central question in science policy is how the research system can be mobilized to help tackle global, multi-faceted, societal challenges, particularly those that emerge rapidly. Research can be part of a broader response to what are broadly viewed as security threats such as climate change, malaria or antibiotic resistance. These issues involve a range of stakeholders with different understandings and expectations as to what the problems and risks are, what specific solutions should be sought, what role science and technology should play and how research should be configured to address the challenge.

As such, it is the responsibility of the academic research system to solve societally important problems, and, to this end, innovation in the research system itself is required. It therefore falls perhaps to those who specialize in the study of innovation and research and development (R&D) to develop innovations to apply to the research process itself, in order to increase the (natural and social) scientific rigor and responsiveness of this system itself. Key to this responsibility is a concern with the methodological aspects of research into how streams of knowledge are created globally, and how they act (and interact) to address societally important research problems.

Economically, the world is facing a problem of slowing productivity growth, representing a “productivity puzzle,” with important implications for the living standards of the world’s populations (Haldane, 2017:2):

At this point, it is customary to wheel out the following, now rather over-used Paul Krugman quote: “productivity isn’t everything, but in the long run it is almost everything.” Despite its over-use, this quote does have one important virtue, something not to be taken lightly in this post-fact, post-truth world: it is empirically verifiable and appears to be factually accurate.

The global slowdown in productivity growth is particularly important, for a number of reasons. *First*, it has implications for world development, including those related to the divergence of economic growth between advanced and emergent economies. The rate of growth of productivity has dramatically reduced in almost all advanced economies since 2003 (Fabina and Wright, 2013). *Second*, it highlights the Solow (1987:36) paradox, whereby “what everyone feels to have been a technological revolution, a drastic change in our productivity lives, has been accompanied everywhere, including Japan, by a slowing-down of productivity growth, not by a step up” and you “can see the computer age everywhere but in the productivity statistics.” This paradox suggests that, notwithstanding the technological advances associated with what has been termed the ‘Fourth Industrial Revolution’ (Schwab, 2017), productivity growth seems to have been limited to Internet-related

activities, as the behavioural impact of innovations introduced by Google and others have yet to be felt in economic terms (Byrne, Fernald and Reinsdorf, 2016). Information technology (IT) has not been found to increase output even in IT-intensive industries, challenging certain assumptions of the technological-discontinuity perspective (Acemoglu, Autor, Dorn, Hansen and Price, 2014).

Contributing to this body of literature, this paper seeks to derive certain theoretical propositions from the literature, and to juxtapose these propositions against the topics and methodologies of certain published work at the forefront of the world's field of knowledge innovation (the study of how research itself is researched and innovated). A purposive sample of latest 2018 and 2019 published articles from the world's foremost journal in this field is used to provide an analysis of the current state of the field, and of its specific topics and methodologies.

The objective of this paper is therefore to interrogate the state of the art in contemporary methodology in the field of research innovation, and to test patterns in this methodological evidence against certain theoretical propositions developed here on the basis of a novel synthesis of theory. The research question posed in this paper is therefore, what are the front line cross-sectional patterns in topics and methodologies currently published at the forefront of the field of knowledge innovation, and how do they conform to the front line of theory in this area? The novel contribution of this paper is therefore its interrogation of this methodological literature and its derivation of a conceptual measure of the distance between these methodologies and those required in order to keep up with the opportunities that have emerged on account of recent theory development in this area. Theory and literature are now reviewed.

## **2. Theory and literature**

The core arguments of this paper draw from a body of economic literature that has developed over time suggesting that returns to investments in research and R&D are diminishing over time. This literature includes longstanding theoretical models, such as those of Kortum (1997) and Segerstrom (1997), and, more recently, Jones (2009). These models produce different theoretical rationales for the 'burden of knowledge effect,' which according to Jones (2009) describes the mechanisms through which returns to investments in research are diminishing across contexts. In other words, it is increasingly difficult to achieve breakthroughs in research over time. These theoretical predictions have been borne out by empirical evidence (for a more detailed commentary on this evidence, see Cowen, 2011). Indeed, according to Gordon (2016: 2):

...advances since 1970 have tended to be channelled into a narrow sphere of human activity having to do with entertainment, communications, and the collection and processing of information. For the rest of what humans care about- food clothing, shelter, transportation, health, and working conditions both inside and outside the home- progress slowed down after 1970, both qualitatively and quantitatively. Our best measure of the pace of innovation and technical progress is total factor productivity (hereafter TFP), a measure of how quickly output is growing relative to the growth of labor and capital inputs. TFP grew after 1970 at barely a third the rate achieved between 1920 and 1970.

Others have cautioned that technological advances herald a 'second machine age' in which technology no longer only complements human activity (the 'first machine age') but is beginning to replace it, and that new forms of market dominance by technologically-enabled firms may be increasing inequality as the median earnings of firms draw away from median individual wages (Brynjolfsson and McAfee, 2014). Technological proliferation can pose serious risks to human societies, with almost unimaginable uncertainties associated with technological advances (Vinge, 1993; Bostrom, 2014, Tegmark, 2017). Indeed, there is an urgent need for responsible innovation (Stilgoe, Owen and Macnaghten, 2013), and technology safety research to enable our ability to manage rapidly developing technologies such as artificial intelligence (AI), biotechnology, geoen지니어ing, nanotechnology (Baum, 2015), dual-use research of concern, and a host of others (see Callaghan, 2018). As argued by Callaghan (2018), the rapid pace of technology development will perhaps carry on, unabated, across the world, irrespective of legislative or other attempts to slow it. If so, then the only way to outpace the growth of technological knowledge is through more efficient (quicker) and effective (rigorous and radically innovative) research capabilities, through which we can learn how to safely manage these technologies. On the basis of this literature, Proposition 1 is derived, *that research methods in the field of research innovation should reflect a concern with radically improving the efficiencies and effectiveness of the research process itself.*

Societally important research problems are not limited to threats such as societal conflict, global pandemics of avian influenza, climate change, antibiotic resistance (Wallace and Ràfols, 2018), or the global productivity growth slowdown (Haldane, 2017), but also relate to the threats posed by increases in knowledge itself (Bostrom, 2014; Tegmark, 2017). *Yet, with a slowdown in the efficiency and effectiveness of the research system itself*, reflected in declining returns to investments in research (Kortum, 1997; Segerstrom, 1997; Cowen, 2011; Gordon, 2016), we might be headed for trouble, as these societal threats outpace our research into how to safely manage them. Thus, research with a focus on research itself, and how to improve its efficiency and effectiveness, is perhaps of increasing importance.

It is perhaps only through a re-calibration of our understanding of the methodological requirements needed to outpace these threats that we might not become their victims. It is therefore perhaps only through developing economies of scale in our methodological capabilities that this is possible (Callaghan, 2018). Proposition 2 is therefore offered here, *that research methods in the field of research innovation should reflect a concern with the development of economies of scale in the research process itself*. These propositions are novel in that they seek to place notions of innovation in the research process itself at the heart of what should be the literature on the study of research itself. In doing so, they challenge certain longstanding assumptions about the prioritisation of objectives in the study of research, in that the topic of these propositions has been largely absent in the innovation literature.

To what extent, then, does research at the front line of the study of knowledge creation itself, as reflected in the topics and methodologies of the latest research in the world's foremost journal on research innovation conform to the vision captured in these propositions? The latest and most up to date research in this field is therefore reviewed to answer this question in the sections that follow. First, however, the methodology of the review process is outlined.

### **3. Methodology**

In performing reviews, it is important to follow a systematic process, so as to develop evidence-informed management knowledge (Tranfield, Denyer and Smart, 2003). To do so, this project sought to review a comprehensive and purposive sample of the latest articles of two volumes (2018 and 2019) of the foremost journal in the field of research innovation, namely *Research Policy*. These 25 articles are taken to reflect a broad cross-section of the topics and methodologies at the forefront of the field. A detailed analysis of the research designs, methodological approaches and statistical and econometric techniques applied in these studies is used as the basis for the discussions here. A detailed summary list of the articles and their methodological characteristics is included in an Appendix, which is available from the authors on request. In this Appendix, a broad categorisation of the research topics of these articles is provided, and also of their methods.

### **4. The state of the art at this current time**

A cross-sectional review of these articles reveals four clusters of topics, namely (i) technological development across international boundaries, (ii) silo-based versus multidisciplinary research; (iii) the role of policy, and (iv) novel technologies applied to research methodologies. These are each discussed as follows.

#### **4.1 Theme 1: Technological development across international boundaries**

The papers in this category seem to use research designs that take advantage of the large data necessary for country-level analysis. For example, Jin (2019) uses research conference proceedings published by the International Electric Vehicle Symposium (EVS) from 1990 to 2009. His sample includes 24 symposia, 5092 scientists, 2864 papers and 8714 scientist-year observations. With its primarily commercial focus, the socioenvironmental contribution of Jin's (2019) work seems to largely be in its focus on research choices pertaining to electric versus hybrid vehicle production. His paper is perhaps peripherally related to what is predicted by Proposition 1, in that it offers insights into what might be levers that exist between individual and country levels of research. Again, this might be a second order relationship, in that it does not fully satisfy the predictions of Proposition 2.

Dominguez Lacasa et al. (2019) use a statistical framework based on patent indicators as a measure of technological upgrading for BRICS economies for the period 1980-2015. Their investigation of patterns in the

technological development of BRICS countries offers information that is useful in terms of understanding how to develop research, and is taken to therefore meet the qualitative requirements of Proposition 1. In its consideration of frontier and lagging technology innovation activities it also references the way scale dynamics can materialise at national levels, and is also taken to meet the predictions of Proposition 2.

Research on the dynamism of exporting firms and how they upgrade their exported portfolio of exports (Castellani and Fassio, 2019) demonstrates the continued importance of exports in this body of literature. Castellani and Fassio (2019) use a sample of over 14 000 Swedish manufacturing firms, comprising the years 2001-2012. Although important in the way in which it highlights issues of technological upgrading at firm level, this study is only peripherally related to the two principles.

Linking to issues of convergence versus divergence for the 'North' (advanced economies) versus the 'South' (emerging economies) a study in the sample investigates the drivers of growth, integrating the Schumpeterian perspective of technical and structural change with the Keynesian approach to effective demand and balance-of-payment constraint (Cimoli, Pereima and Porcile, 2019). Using a modelling approach, Cimoli et al. (2019) make comparisons between Argentina, which abandoned active industrial policy in the 1970s, Brazil, which followed in the 1980s, and Korea, which continued with it. They highlight the importance of exports in mitigating divergence and enabling convergence between emerging and advanced economies. This study does not accord directly with the Propositions it is tested against, and is taken to be only peripherally relevant to the vision of radically increasing the efficiency and effectiveness of the research process itself, and the development of economies of scale in its processes.

#### *4.1.1 The technological frontier and technological development*

According to research in the EU context, across the years 2000-2015, there has been considerable heterogeneity in R&D intensity for firms within the same sector, as variation in R&D intensities largely does not decrease over time for these firms (Coad, 2019). This connects to the broader literature that suggests that the puzzle of the global productivity slowdown (Haldane, 2017) may relate more to divergence between firms rather than divergence of remuneration within them (OECD, 2015), with important implications for debates on societal inequality, as well as the ability of firms to keep up with the technological frontier, and not fall back from it.

Coad (2019) uses microdata from the EU Industrial R&D Investment Scoreboard, developing an unbalanced panel data set for the period 2000-2015. His research design and findings may be particularly important as they relate to the problem of fat tails in the distribution of firms, according to their productivity, whereby most firms are well behind the technological frontier, reflecting inadequate diffusion of knowledge (OECD, 2015; Haldane, 2017). Coad's study, however, seems to peripherally relate to the two propositions, demonstrating only a second order association, notwithstanding the importance of the topic.

Grillitsch et al. (2019) use longitudinal Swedish linked-employer-employee micro-data, of 1 034 734 individual observations of 225 063 firms, based on employee educational and job occupations in firms. This employer-employee occupational data is merged with business registry and financial indicator data to create a panel dataset for the period 2004-2011. The identification of how three different knowledge types contribute to growth in small and medium-sized firms, and the research design applied here provides important insights for further research seeking to radically improve the efficiency and effectiveness of the research process itself (Proposition 1) and how to enable economies of scale in the research process (Proposition 2).

Another study in this category tests differences in the skills base of the circular economy, differentiating between the skills and educational endowments associated with human capital requirements (Burger *et al.*, 2019). The importance of the circular economy relates to changing of the 'end-of-life' mentality of production toward renewable (environment-friendly) forms of product disposal. This study reflects an environmental focus that is shared with other studies included here (Burlinson, Giulietti and Battisti, 2018, Conti *et al.*, 2018, Helveston *et al.*, 2019, Jin, 2019, Wallace and Ràfols, 2018). Although its focus is on environmental aspects of research innovation, it is not taken to accord with the two principles it is tested against here.

Conti et al. (2018) also study the field of renewable energy sources in terms of trends in patent citations. They investigate the extent to which the EU innovation system in the field of renewable energy sources is fragmented, finding that increasing renewable energy sources patent citation patterns are similar post-2000 to

those of 3D and robotics research but differ from those of IT and biotechnology, which have decreased (Conti *et al.*, 2018). Whereas these two studies may not reflect the vision of the two propositions, they offer important insights into technology upgrading in relation to environmentally important areas of research innovation.

#### *4.1.2 Collaboration networks across borders*

Country borders remain an important constraint to the diffusion of innovation. In light of this overarching constraint to knowledge diffusion, certain of these 'latest' papers relate to the way firms enter into different country markets. An example is the case of automotive firms and their entry into Spain after it joined the European Union (EU) (Barroso, Giarratana and Pasquini, 2019), the consequences for domestic innovation of foreign firms entering into the Chinese plug-in electric vehicle market using the official joint venture regime (Helveston *et al.*, 2019), and cross-border international research collaborations (IRCs) themselves as research topic (Chen, Zhang and Fu, 2019).

Another example relates to the Chinese context, a study of firms engaged in the development of plug-in electric vehicles, finding firms to be more successful in their experimentation if they are independent of the official joint venture regime that requires foreign firms to partner (with equity restrictions) with local firms, in that this joint venture regime constrains the diffusion of technologies from foreign to local firms (Helveston *et al.*, 2019). Local firms (and not those that join joint ventures with foreign firms) that are independent of these joint ventures typically undertake extensive experimentation across infrastructure, core system, subsystem, and component levels of the plug-in electric vehicle technology platform. Foreign firms seem, therefore, to hold back their latest technologies in these joint ventures (Helveston *et al.*, 2019). By showing certain boundary constraints to innovation diffusion across countries, and particularly the role of the state as a constraint to this diffusion by virtue of its policies, this study seems to develop important insights into enabling conditions for research expansion, and is taken to represent second order correspondence with Proposal 1.

Similarly, the same could be argued here for Proposition 2. Their use of qualitative methods is helpful in the way it identifies causal relationships.

Joint ventures offer important opportunities for international knowledge sharing, but also for risk mitigation. Joint ventures, as a form of governance in R&D outsourcing alliances, have been shown to reduce the chances of negative share price spillovers from a partner's biopharmaceutical safety crisis, but to increase the intensity of the spillover costs if they do occur (Diestre, 2018). Diestre (2018) uses data on 296 R&D outsourcing alliances (involving 145 different firms, 64% of these pharmaceutical firms and 36% of these biotechnology firms) in the biopharmaceutical industry, across the years 2000-2009. The methods and design of this study, and its findings, are taken to only peripherally relate to the Propositions, however, and are taken to represent second order relationships, at best.

#### *4.1.3 Research into research itself: Reflexive research on international collaboration networks*

An important topic area in innovation studies is research into research practice itself, or reflexive research, as it relates to international research collaborations. This is the primary domain expected to meet the predictions of the propositions developed here. An example of this type of research into international research collaboration uses co-citation network analysis, main path analysis, and bibliographic coupling analysis, together with qualitative review (Chen, Zhang and Fu, 2019). Indeed, international research collaboration itself, "has been increasingly important as an emerging area of innovation studies" (Chen *et al.*, 2019, 149).

Chen *et al.* (2019) provide a systematic and comprehensive overview of international collaboration research literature (IRC), reviewing the intellectual base, primary research trajectories, and intellectual communities of the IRC field, across the years 1957-2015. Their co-citation network analysis, main path analysis, and bibliographic coupling analysis is undertaken with CiteSpace, Pajek and Gephi software. They demonstrate that IRC research has progressed across three phases, namely an emergence phase (1957-1991) of emergent growth, a fermentation phase (1992-2005) of deepening research, and a take-off phase (2006-2015) of rapidly expanding research. Chen *et al.*'s (2019) study offers a useful indicator of research increase across boundaries and reflects the essence of what drives the logics behind these propositions: the investigation of research processes themselves, and of how research productivity can accelerate.

#### **4.2 Theme 2: Silo-based versus multidisciplinary research: implications for societal contributions**

Longstanding debates have considered the costs of engaging in Mode 1 knowledge creation (a single-discipline research focus) at the expense of Mode 2 (research that adopts multidisciplinary frameworks, particularly when seeking to tackle societally important research problems) (Gibbons, Limoges, Nowotny, Schwartzman, Scott and Trow (2002). Recent work in this area includes an analysis of the influence of multidisciplinary work (cognitive openness) and higher numbers of collaborations (structural openness) on the citation counts of individual researchers (Belkhouja and Yoon, 2018). This concern with the gap between research and practice is also echoed in another study that stresses the importance of management regimes in steering research toward Mode 1 outcomes at the expense of those of Mode 2 (Amara, Olmos-Peñuela and Fernández-de-Lucio, 2019).

Belkhouja and Yoon (2018) apply a research design and methodology based on tests of a longitudinal sample of 35 296 scholars published in business and management journals. They find that whereas younger academics can increase their impact by ensuring moderate cognitive openness and structural openness, older academics typically do this by increasing their cognitive openness and reducing their structural openness by working with institutional colleagues rather than those from other institutions. These findings highlight certain concerns associated with the finding that standardised research evaluation tools and systems might be incentivizing Mode 1 (cognitive closure) research in certain contexts at the expense of Mode 2 research (Amara, Olmos-Peñuela and Fernández-de-Lucio, 2019). Amara et al. (2019) surveyed Spanish National Research Council staff in 2011, a sample of 4240 researchers, but acknowledge that their research, in Spain, may be at odds with examples from the UK, the latter which may have an institutional structure that also incentivizes cognitive openness in funding applications. The need for multidisciplinary research is perhaps key to attaining the vision of increasing the overall efficiencies and effectiveness of societally important research, and also in order to attain economies of scale in societally important research, so these two studies are taken to be supportive of Propositions 1 and 2.

Grant applicants may have lower subsequent citations than non-applicants, but tend to subsequently publish more, publish in higher impact factor journals, and to typically increase their numbers of co-authors (Ayoubi, Pezzoni and Visentin, 2019). This study applied propensity score matching to a sample of 255 grant applications and 775 distinct individual applicants for Swiss interdisciplinary (Engineering and Science & Medicine) research grant applications over the period 2008-2012. Their unit of analysis is the pair applicant-application: 1060 application pairs. They supplemented this data through the use of Elsevier's Scopus database. This study also accords with the vision of increasing the efficiencies and effectiveness of research (Proposition 1), although it does not explicitly reference the development of economies of scale in the research process itself (Proposition 2). Reference to this study therefore supports Proposition 1, but not Proposition 2.

#### **4.3 Theme 3: The role of policy: who makes the rules of research?**

Centralised priority setting processes can be problematic, as they can be “vulnerable to capture by particular interests or incumbent institutions,” even as there is a need for the explicit prioritization of certain research, but this requires the incorporation of inclusive stakeholder perspectives (Wallace and Ràfols, 2018). In their study of global threats to human populations, with a focus on avian influenza, Wallace and Ràfols (2018) use a mixed method analysis, triangulating evidence from interviews, bibliometrics, funding statistics, and literature.

They find that the landscape of public avian influenza research is not driven directly by expectations of societal outcomes. It is instead shaped by institutional drivers, including (i) pharmaceutical industry priorities, (ii) publishing and public research funding pressures, and (iii) the mandates of science-based policy and/or public health organisations.

Another study relates to the influence of government participative loans on the growth of entrepreneurial ventures (Bertoni, Martí and Reverte, 2019). Bertoni et al. (2019) studied 512 entrepreneurial ventures that received a participant loan from a Spanish government agency, across the years 2005-2011, finding on the basis of propensity score matching that recipient firms have higher employment and sales. This article, although not specifically aligned with Propositions 1 or 2, demonstrates the importance of state support for entrepreneurial ventures, and highlights the importance of decisions about which firms or which innovations states should or should not support.

Wallace and Ràfols (2018, 1975) stress the importance of the management of the research system itself, to increase its responsiveness to societally important threats, including those such as climate change, malaria or antibiotic resistance, which require rapid response. Callaghan (2015; 2016; 2017; 2018) argues for the development of near real time research capability, which is particularly important in disaster research response, where catastrophic events require a research response, but the data required for this is typically only available after the onset of the catastrophe. Although certain of these papers at the forefront of the world's research into research innovation do relate to the theoretical propositions advanced here, which stream of research embodies their principles the most? The studies discussed next are arguably the most important in this regard.

#### **4.4 Theme 4: Novel technologies applied to research methodologies**

Callaghan (2015) stresses the importance of novel methodologies like crowdsourcing that can radically increase the economies of scale attainable in research. Using such methodologies can allow a researcher to access not only large volumes of data, but also analysis. Crowdsourcing is an important source of innovation for firms, but the attraction of solvers is found to be a function of a seeker's knowledge of the problem domain as well as the status of the seeker (Pollok, Lüttgens and Piller, 2019). Knowledge of the conditions under which a firm shifts from closed to open innovation (Bahemia, Sillince and Vanhaverbeke, 2018) is an important contribution to this topic area.

Pollok et al. (2019) analyse 637 crowdsourcing projects hosted by NineSigma, using requests for proposals (RFP) as their unit of analysis. They create a unique dataset of project-level data with information about each crowdsourcing project hosted by NineSigma for the five year period 2009-2014. Their data set includes 238 seeker firms with 889 RFPs. Bahemia et al. (2018) offer an analysis of a radical innovation project at Jaguar (UK). Both of these studies accord with the vision of Propositions 1 and 2, as open innovation offers the potential to not only radically improve the efficiencies and effectiveness of the research process, but also to attain economies of scale.

Another paper that accords with these propositions is a study that investigates the relationships between societal trust and open innovation (Brockman, Khurana and Zhong, 2018). Brockman et al. (2018) use panel data on co-owned patents across 29 countries, finding that firms with higher levels of trust are able to produce a higher level of joint output.

## **5. Conclusion**

The objective of this paper was to derive certain theoretical propositions from the 'front line' of the literature, or novel theory that predicts that it is research innovation as a field that holds the promise of addressing certain serious societal threats. These propositions are taken to be particularly important because theory suggests that certain of these threats are increasing in their probabilities of occurrence, while scientific breakthroughs are becoming harder to come by, a phenomenon described in the economics literature as the burden of knowledge effect. In this paper, these theoretical propositions are juxtaposed against the topics and methodologies of certain articles, representing the corresponding 'front line' of theory versus that of current publications in the field. Results of this process suggest that although certain areas of the field are moving in this direction (conforming to the methodological vision of the propositions), the majority of the papers are not. This paper therefore frames this problem as a methodological one, suggesting that it is only research into the improvement of our methodologies that can allow us to outpace the growth in certain societal threats. Given agreement about the dangers of the burden of knowledge effect, and the declining ability of research to address growing societal dangers, research in this field should interrogate the reasons for why the study of the research process itself (and its methodological frameworks) has not become an overriding priority in this field.

It is (arguably) left to researchers in the business and management sciences to deal with this issue, given their advantages in multidisciplinary theory development and the need for a focus on *the management of the research process itself*. It is argued that further research is urgently needed to interrogate the methodological issues raised in this paper, before it is too late.

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# Problems in Cross-Cultural Collaborative Research: A Case Study Analysis

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**Abstract:** There is little doubt that cross-disciplinary and cross-national collaborative research teams are important in an increasingly globalized world. With the breaking down of disciplinary silos currently being encouraged by Universities, such collaborative research groups are becoming more common in Universities anxious to increase their research outputs across the board. However, problems of reflexivity, divergences in consciousness and experience-based value interpretations, lead to differences in emphasis put in the analytical process of data interpretation in the context of cross-cultural communities-of- research-practice which can cause defensive (deflexive) reactions counterproductive to the collaborative research goal of global validation of specific theories and concepts. Along with these specific interpretive research specific problems that stem largely from how Popper's third world (the world of objective thought) is constituted in the analytical lenses and value systems of personnel in collaborative multinational research groups, there are management problems of co-ordination and administration of the research process itself. These spring from several sources including inequalities in power among researchers, different perceptions of reward, divergent conceptual and data interpretations, and the need to maintain momentum to achieve a given research goal within a specific time period. The rationale of the study is to investigate, using Popper's Three World heuristic, the epistemological and ontological (contextual) sources of practical problems of reflexivity in the management of collaborative research. To achieve this end, the paper presents a longitudinal descriptive case study of issues arising in the functioning of an on-going cross-cultural, multi-national, collaborative research group. Remedial steps for improving the functioning and output of global research initiatives that utilize a collaborative research process are outlined in the paper.

**Keywords:** research. cross-cultural, multinational collaboration,

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## 1. Introduction

The paper covers the important area of cross-cultural collaborative research and problems of reflexivity in research interpretation. The paper applies Popper's (1972) three worlds' schema as an analytical framework in describing and explaining research data interpretation.

The study contributes to the extant literature by offering rare, qualitative, longitudinal insight into a 'living' case study of a collaborative multicultural and multinational research group's functional problems with specific focus on the key aspect of data and concept interpretation. The paper also presents a philosophical explanatory account of the epistemological base to the processes of reflexivity and deflexivity in research collaboration. The paper presents a qualitatively-oriented empirical description of Popper's (1972) three worlds heuristic and Wittgenstein's account of the importance of context in interpreting the meaning of concepts, for understanding how data and conceptual interpretations occur in multicultural and multinational collaborative research situations. The paper takes the following structure. First a literature review is presented describing Popper's (1972) three worlds heuristic and Wittgenstein's (1958) analysis of the importance of context in the interpretation of the meaning of words and concepts. The literature review ends with a description of the concept of 'reflexivity' and 'deflexivity' in the collaborative research context.

Second, the qualitative descriptive case study methodology used in the study is briefly discussed. Third the findings of the study are presented by giving a detailed longitudinal analysis of the structure, function and operations of a specific cross-cultural, multinational collaborative research group. Fourth, a discussion is presented that describes in detail a specific empirical example of reflexivity and deflexivity that illustrates the importance of context in conceptual understanding.

Finally, the paper concludes with a brief outline of its contribution, limitations and recommendations for further research.

## 2. Literature review

### 2.1 Popper's Three Worlds

Popper's (1972) three worlds' schema consists of three aspects. World 1, which is the world of physical objects, World 2, the subjective world of perception and interpretation, and World 3, the trans-subjective world of human abstract thought and products from this in books and writing. These three worlds are not isolated from one another but interact. As Popper (1972, p.155) puts it, "The three worlds are so related that the first two can interact and that the last two can interact. Thus, the second world, the world of subjective or personal experiences, interacts with each of the other two worlds. The first world and the third world cannot interact, save through the intervention of the second world, the world of subjective or personal experiences" Popper (1972, p.155) goes on to describe in more detail the three worlds' interaction: "It seems to me most important to describe and explain the relationship of the three worlds in this way – that is, with the second world as the mediator between the first and the third. Although rarely stated, this view seems to me clearly involved in the three-world theory. According to this theory, the human mind can see a physical body in the literal sense of 'see' in which the eyes participate in the process. It can also 'see' or 'grasp' an arithmetical or geometrical object; a number, or a geometrical figure. But although in this sense 'see' or 'grasp' is used in a metaphorical way, it nevertheless denotes a real relationship between the mind and its intelligible object, the arithmetical or geometrical object; and the relationship is closely analogous to 'seeing' in the literal sense. Thus, the mind may be linked with objects of both the first world and the third world." Popper's idea of the interaction of the three worlds is illustrated in Figure 1.

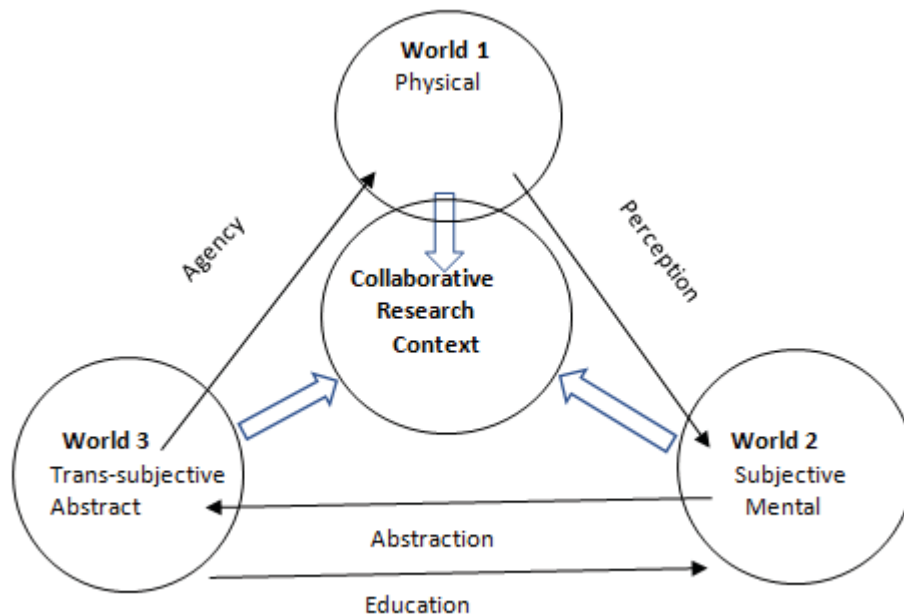


Figure 1: Popper's (1972) Three Worlds heuristic.

Figure 1 indicates possible types of interaction between the three worlds. The interaction between World 1 (the physical world) and World 2 (the subjective mental world) is indicated by the arrow in the diagram, as one of perception by individuals of the of the objective physical world. Interaction between Worlds 2 and 3 is indicated by the arrows in the diagram as two-way: with World 3 ( the world of trans-subjective abstractive products, such as books and written artefacts) being the 'construct' of the abstractions of the subjective mental world (World 2). The abstract trans-subjective artefacts are built up over human history and relayed back to World 2 through education. Finally humans able to use their written knowledge and experience to act as agents by using, controlling or changing aspects of World 1 ( the physical world).

### 2.2 Wittgenstein and the importance of context on interpretation and meaning

Wittgenstein's (1958) *Philosophical Investigations* differs from his earlier work by moving from his original quest to find the building blocks of language and meaning, to one where the context of language use is recognized as a core factor in the construction of meaning [7]. Wittgenstein maintains that there are no objective meanings to words and concepts in language that are not context-dependent. For example, the

word “game” can have widely divergent meanings depending on the context of its usage. There is no objectively and unambiguously definition of the word “game” through propositions (Nugent et al, 2015). As Wittgenstein (1958, pp. 21-22), “For a large class of cases – though not for all – in which we employ the word “meaning” it can be defined thus: the meaning of a word is its use in the language. And the meaning of a name is sometimes explained by pointing to its bearer. “

The importance of both Popper’s (1972) three worlds heuristic and Wittgenstein’s (1958) meaning-in-context analysis for the successful functioning of cross-cultural collaborative research groups is discussed in detail later in the paper.

### **2.3 The concepts of reflexivity and deflexivity**

Easterby-Smith and Malina’s (1999) study investigates the quality of business relationships between the United Kingdom and China, incorporating a collaborative research group in a singular project. Easterby-Smith and Malina (1999) describe the reflexivity processes that occurred in a single cross-cultural research project involving academics from the U.K and China with similar social science disciplinary education. Jain, Hallensleben and Manger (2013) maintain that reflexivity is a dialectical concept involving a process of thesis and anti-thesis formulation and negotiation. The dialectical process of reflexivity negotiation occurs strongly in cross-cultural collaborative research which “may cause dialectic counter-movements in the shape of defensive reactions” (Jain, Hallensleben and Manger, 2013, p.9). Such deflexive, defensive reactions can be distinguished from reflexivity as indicated by Jain, Hallensleben and Manger (2013, p.10): “while reflexivity produces difference, deflexivity basically means the production of identity, unambiguity and firmness by means of structural momentum and structural violence. But neither is reflexivity merely “positive” nor is deflection/deflexivity fully “negative”. Both carry “productive” and “destructive” elements. The perpetuated self-questioning and the openness invoked by reflexivity are counter-productive when it comes to the practical appliance of learning experience and new ideas, i.e. innovation. This is exactly the strength of deflexivity”. In cross-cultural, multi-national collaborative research, the concepts of reflexivity/deflexivity are useful in describing the continual interpretation negotiation process in action. Cultural diversity characteristic of multinational collaborative research groups can be effective in generating creativity among group members and developing new bodies through individual reflexivity contributions to the group’s emerging knowledge and should be allowed full rein. However, antithetical deflexive responses among group members are also important in making sense of the extant data, and ultimately, building consensus knowledge.

### **3. Method**

The research design incorporates longitudinal, ‘interpretivist’ techniques (Ghauri and Gronhaugh, 2010).

Interpretivist researchers adopt ideographic paradigm-based qualitative methods that elicit data that allow the researcher to “reflect on subjective meanings and interpretations; the social and culturally embedded nature of individual experiences; and the relationship between the researcher and researched” (Rubin and Rubin, 2005, as cited in Broom & Willis, 2007, p. 25). The case study approach adopted is descriptive. Yin (2003) indicates that the descriptive case study method is used to delineate a phenomenon in its real-life context.

### **4. Findings**

This section describes using a qualitative descriptive case study analysis the structure, function and output of an on-going multicultural collaborative research group over an 8-year period. It applies Popper’s three worlds’ schema and Wittgenstein’s (1958) contextual analysis to help explain and unravel the concepts of reflexivity and deflexivity using a qualitative empirical analysis. Collaborative cross-cultural multidisciplinary research in the social sciences can generate enormous benefits by offering a richness of perspective which can aid in validating concepts and theories.

The cross-cultural and multi-national collaborative research group, named the Strategic Foresight Research Group (SFRG), was initiated in 2011. Its purpose and function are to:

- Generate high quality research outputs through collaborative national and international research.
- Augment the research output, and
- Offer a training resource to help junior researchers develop their research expertise.

The Strategic Forecasting Research Group research focuses on multidisciplinary and multinational research projects aimed at investigating management and organizational issues, and to provide multicultural theoretical and empirical perspectives. Research by the group covers aspects of international relevance including governance, social responsibility, responsible leadership, intercultural conflict management, research productivity, organizational citizenship, entrepreneurship, teaching and learning.

The group involves sixteen active researchers with about half based overseas. Researchers take leadership roles for specific projects as they arise, ad hoc, based on personal interest and expertise. Research is funded by local and overseas grants and through financial packages/allowances provided to individual group members. Research meetings are held by national (SA-based) members of the group when project-related research issues arise. Research meetings focus on communicating new multidisciplinary research ideas among national and international members and building collaborative research teams for projects and make applications for funding. Research outputs and collaborations for specifically targeted conferences and journals are conducted electronically as required. Conferences and seminars overseas are used to communicate with existing members and to extend networks.

Easterby-Smith and Malina (1999) identify five steps in the collaborative research process which are used in this paper to structure the research process, projects and outputs of the SFRG. The five phases of the research process can be listed as follows

- Harnessing networks, the initial phase of group formation, consisting of informal meetings aimed at creating trust and communication among team members.
- Focusing the project defines objectives of a given research project and is a crucial aspect for applications for research funding.
- Accessing data, the third step in the research process as elaborated by Easterby-Smith and Malina (1999) brought the status and expertise of the researchers and their role in the research process. Leaders of specific projects were often more senior academics and generally held more power and influence in the way the data was collected and analysed.
- interpretation or making sense out of the data comprised the fourth and perhaps the most crucial phase in the collaborative research process. Here the processes of reflexivity and deflexivity became prominent and often negotiation to reach reaching a satisfactory consensus took substantial time. There was a generally a need to discuss and negotiate similarities and differences in interpretations in the collaborative research teams to reach mutually acceptable consensus in interpretations of the data. Sometimes this was not fully achieved and destructive deflexivity reactions occurred.
- writing and dissemination comprised the fifth phase of the research process. Articles, chapters in books and conference papers were published with differing co-authorships reflecting the substantive
- collaborative effort of different individuals in the research process.

The Easterby-Smith and Malina (1999) 5 phases of the collaborative research process are used to classify the 8-year history of the SFRG research project processes, with an additional '6th phase' (though not formally a phase in itself) to indicate the type of research output produced. The collaborative research processes pertaining to the 8-year period of the SFRG's operations are illustrated in Table1.

The purpose of Table 1 is to indicate very briefly, the content, context and research outcomes of cross-national, cross-cultural and multidisciplinary collaborative research group over an 8 years period. The paper then focuses on a detailed case study description of a recent example of the problem of interpretation /reflexivity. The problem of reflexivity, probably the core problem of managing such collaborative research groups, is dissected in some detail using Popper's Three World heuristic.

Table I indicates 8-year history of the SFRG to date and shows that cross-cultural and multinational multidisciplinary collaborative research can generate a significant number of high-quality international publications. 'Multidisciplinary' in the SFRG context means disciplines that are all within the general ambit of business studies and commerce. The research methods employed by, for example, accountants and financial management researchers who were part of the SFRG products at different points in time are often quite distinct from those used by Management and Human Resources Management with the former holding a distinct quantitative bias. 'Multicultural' and multinational refers to research projects located in different countries. For example, collaborative work involving researchers based in Germany, Sweden, South Africa and

the United States of America, led to several published research outputs (Coldwell and Fried, 2012, King, Joosub and Coldwell, 2013 and Coldwell, Williamson and Talbot, 2019).

**Table 1:** National and multinational research collaboration: specific phases, descriptors and research outputs. (Adapted and updated from Coldwell and Fried, 2014).

National and multinational research collaborative teams	Phase 1: Harnessing networks	Phase 2: Focusing research project	Phase 3: Accessing data	Phase 4: Interpretation	Phase 5: Writing and dissemination	Phase 6: Research Outputs
<b>South Africa (Founding institution with national multidisciplinary research Multinational team consisting of: accounting, auditing, governance, finance, Economics, Marketing, Management and HRM)</b>	Interdisciplinary foundations of network built on: i) Personal contact. ii) Academic and research interest iii) Research group formation	Projects arose from mutual research interests and commonalities in research focus	Group research division of labor responsibilities in: i) Data collection instrument, ii) Sample design and iii) Data administration and collection and capture.	Project leaders of specific research project interpret the data from data analysis	Writing of research product conducted by project leader. Project group members involved in secondary research and project 'housework' e.g. editing, referencing and formatting	National and international conferences and national and international journal articles with different management science foci.
<b>South Africa-Canada</b>	Network from i), ii) and iii) arising from a specific conference meeting in Johannesburg	Specific project arose from conference paper presentation	Project group Division of labor based on expertise for i) ii) and iii)	Three project collaborators, 2 in SA and 1 in Canada	Collaboration between SA and Canada project members	Project suspended / Data unavailable
<b>UK, South Africa-Germany</b>	Network from i), ii) and iii) arising from Summer School originally held in Chemnitz	Specific project arose from visiting professorship (Open University, Milton Keynes) and Summer School in Chemnitz	Group Division of labor based on expertise i), ii) iii) and locality	Project collaborators consisting of two members, 1 in Germany and 1 in SA	Collaboration between SA and German researchers	Conference papers and international journal article
<b>South Africa-Sweden</b>	Network from i), ii) and iii)	Specific project arose from invitation to write a chapter in Knowledge Management research handbook	Group Division of labor based on expertise i), ii) and iii).	Project collaborators 1 in Sweden and 1 in SA	Collaboration between SA and Swedish researchers	Chapter in book and journal article
<b>South Africa-United States of America</b>	Network from i), ii) and iii) arising from	Specific project arose from conference paper presentation	Group Division of labor based on expertise i), ii) and iii).	Project collaborators 1 in USA and 3 in SA	Collaboration between SA and USA researchers	Conference paper and International journal papers
<b>South Africa-New Zealand</b>	Network from i), ii) and iii) arising from an invited personal visit to Wits during sabbatical leave	Specific project arose from invitation to contribute a chapter in a book on corporate social responsibility	Group Division of labor based on expertise i), ii) and iii).	Project collaborators consisted of 1 in SA and editor of book in New Zealand	Collaboration between SA researcher and New Zealand Editor	Chapter in book

National and multinational research collaborative teams	Phase 1: Harnessing networks	Phase 2: Focusing research project	Phase 3: Accessing data	Phase 4: Interpretation	Phase 5: Writing and dissemination	Phase 6: Research Outputs
South Africa – United Kingdom	Network arose from i), ii) and iii) PhD supervisor of a research group member. SA conference. Visit to SA and meeting of UK professor. Invitation to join UK research group. UK conference	Projects arose from supervision of doctoral degree of one member of the research Group and conference paper	Group Division of labor based on expertise i), ii) and iii).	Multiple projects' collaboration 4 SA and 1 in UK	National and international collaboration between SA and UK	Conference papers national and international journal articles
South Africa-Israel	<i>Network arose from ii) Academic and research interest</i> <i>Network with</i>	Project arose from article publication in an international journal on a research topic of mutual interest	Group Division of labor based on expertise i), ii) and iii).	Project collaborators 1 in South Africa and 1 in Israel (currently not a member)	Collaboration between SA and Israel researchers	Project suspended indefinitely
South Africa-Australia	<i>Professor at Curtin University Mutual research interest. Authored Journal article</i>	Project arose from article publication in an international journal on a research topic of mutual interest	Group Division of labor based on expertise i), ii) and iii).	Project collaborators 2 in South Africa d 1 in Australia an 1 in U.K	Collaboration between SA and Australia and UK researchers	International conference paper and international journal articles

The problem of reflexivity in the interpretation phase of collaborative research work affected the Strategic Foresight Research Group (SFRG) in three specific ways.

1. The research collaboration performed by the SFRG involves or involved at different phases in its history, collaboration between South African, German, Swedish, Canadian American, British. New Zealand, Australian and Israeli - based academics.
2. The research projects conducted by the SFRG are dynamic with completed projects being replaced by new ones or adaptations of older ones which do not necessarily involve the same academic personnel from the same countries and,
3. The research teams combines, or combined, researchers across a wide Management disciplinary base and includes(d) accountants, auditors, marketers; as well as specialists in Management, HRM, Finance and Governance.

Disciplinary diversity and multiculturalism/nationalism of the collaborative research teams in different projects at different points in time meant that various perspectives emerged in the interpretation/reflexivity phase. However, in most instances though not all, as discussed, the next section the common goal of producing publishable research products ensured that consensus was achieved.



## **5. Discussion**

The multi-disciplinary and multicultural collaborative research process in the SFRG clearly shows that the reflexive process among researchers is a positive one, where differences in disciplinary perspectives, methodological approaches and cultural and educational backgrounds have blended to generate bodies of new knowledge. However, problems of interpretation have emerged in certain projects and a more detailed qualitative description of a prominent one these is warranted at this stage as it brings out the essence of the problem of reflexivity arising from contextual meanings prominence, strength and diversity of beliefs in business organizations.

Differences of interpretation of the importance and possibility of serendipitous findings from the effects organizational socialization on individual ethical beliefs and the on-going compatibility of these with those of the organization, generated interpretive schism in the specific project group. The group focusing on the effects of organizational socialization on ethical compatibility over time, consisted of four collaborating researchers.

Two researchers were based in South Africa, one in Australia and one in the UK. The difference of reflexive interpretation occurred between the Australian-based researcher and the others in the group, particularly the two researchers operating from the South African context where the empirical data leading to serendipitous findings of ethical incompatibilities between individuals and the organizations that employed them, appeared to develop over time through the on-going organizational socialization process. The difference of opinion through the reflexive process of whether organizational socialization processes could lead to deep ethical incompatibilities and the utility of the concept of serendipity in describing them, led to the eventual withdrawal of the Australia-based member from the research collaborative group. This could be regarded as a deflexive interpretative schism arising from the importance of contextual differences in meanings noted by Wittgenstein. This contextual difference of the meaning, strength and diversity of ethical beliefs in the South African work situation compared to those of the Australian business situation. The contextual differences in the diversity, strength and pervasiveness of ethical beliefs between South Africa and Australia could be attributed to several factors. For instance, while Australia is largely a secular country, South Africa has large Christian, Muslim and Hindu communities. These contextual differences between South Africa and Australia in ethical and religious diversity, led to differences in interpretation of the propensity for negative effects of organizational socialization emerging during organizational socialization and the utility of the concept of serendipity in describing them in the two differing contexts. Moreover, despite the prominence of religious and ethical differences in South Africa many South African businesses were operated by western-oriented, secular managers, making a conflict of ethical perspectives more likely to develop during the organizational socialization process

A process of reflexive negotiation was entered into by the South African project leader before the deflexive withdrawal of the Australian member who was so far contextually removed from understanding the South African situation that he decided, somewhat acrimoniously, to withdraw his name from the journal article derived from the project which was subsequently published in a prominent international journal.

The lesson learned from this case study of collaborative research breakdown, although rare, clearly indicates the force of differences in contextual meanings attached to concepts raised by Wittgenstein and their effect on Worlds 2 and 3 in Popper's heuristic.

## **6. Conclusion**

The paper has described the process of reflexivity and deflexivity in an on-going collaborative research group over time. Its contribution to the extant literature has been largely three-fold. Firstly, it has presented a longitudinal qualitative case study of an operational collaborative research group. Secondly, it has presented a philosophical explanatory account of the epistemological base to the processes of reflexivity and deflexivity in research collaboration. Thirdly, the paper has presented a qualitatively-oriented empirical description of the importance of Popper's three worlds heuristic and Wittgenstein's account of the importance of context in interpreting the meaning of concepts, in understanding how data and conceptual interpretations occur in multicultural and multinational collaborative research situations. However, like all intellectual endeavours, the paper is not without limitations. Although a longitudinal analysis of a collaborative research group over a 5-year period is presented, further research over a longer period would present richer qualitative perspectives of the reflexive process and the problem of deflexivity of which the study has only presented a single example.

The implications for the management of collaborative research groups derived from the study are clear and involve a more careful appreciation and understanding of contextual differences attached to the meaning of concepts and how these might be resolved before reflexive withdrawals of members of collaborating members of research group, Recommendations for further research include further case study analyses in similar multinational collaborative research groups and a comparative study of how differences attached to data and conceptual interpretation can best be managed.

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# Student Experience of the Maximum Variation Framework for Determining Sample Size in Qualitative Research

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**Abstract:** Postgraduate students and early career academics frequently ask: “how many participants are needed in a qualitative research project?” For established researchers, this question is easily answered through intuition and experience. In the literature, the answer is; “it depends”. This paper presents current research on issues of sample size in qualitative research. It offers a framework—maximum variation (MV) to help students and early career academics to understand and address issues of sample size in their research. The MV was trialled through a series of academic development workshops offered to postgraduate students and early career researchers (n=156). Workshop participants were invited to evaluate the workshops using a standard teaching evaluation tool used by the university in which the research was carried out. Overall, participants found the framework useful in addressing issues relating to sample size in qualitative research. Participants also reported an enhanced learning experience in the workshops. The MV framework proposed in this research is part of an ongoing research program that investigates the pedagogy of research methods courses.

**Keywords:** maximum variation, saturation, pedagogy, research methods, qualitative research

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## 1. Introduction

Postgraduate students and novice researchers are often concerned about the number of participants needed in a study to ensure that a study’s outcome has an acceptable level of rigour. Teachers of qualitative research methods hardly cover the depth of discussions needed for students to understand the issues underlying the determination of meaningful sample size (Daniel, 2018). Postgraduate student supervisors offer students inconsistent advice on what constitutes acceptable sample size in any given qualitative research project.

Experienced qualitative researchers are often concerned with addressing issues of sample size in qualitative research projects because it has become a requirement for some significant research funding bodies (Sim, Saunders, Waterfield & Kingstone, 2018).

Despite the recognition of the importance of sample size issues in qualitative research, there is no clear rationale, and researchers do not share set of standards and procedures for determining the minimum sample size in any qualitative study. Most of the available information available in the literature is experiential rather than empirically grounded. For instance, Carlsen and Glenton's (2011) reviewed a total of 220 focus group research publications published in PubMed Central in 2009 and reported that about half (110) of the studies reviewed did not mention the minimum or the maximum number of participants in their studies, raising issues of quality and rigour.

The current research project identifies a wide range of factors students and researchers need to consider when determining adequate sample size in qualitative research studies. The research offers a maximum variation (MV) framework as an essential mechanism for exploring these factors. The MV framework proposed in this research is part of the pedagogical toolbox for teaching students fundamental and advances topics in research methods courses. The rest of the paper is structured as follows. We first presented related literature on issues about sample size in the qualitative research methods literature. Second, the notion of saturation is examined, and its theoretical properties are presented. Third, the Maximum Variation (MV) framework is presented. Fourth, the paper describes the evaluation results of academic development workshops aimed at training postgraduate students and early career researchers about issues of sample size determination in qualitative research. The paper concludes with the discussion of participants’ experience of the MV workshops, and future research directions.

## 2. Related research

Determining an adequate sample size in any research project is essential because it influences the quality of the research outcome (Boddy, 2016; Coyne, 1997). Malterud, Siersma and Guassora (2016) noted that the

choice of adequate sample size in qualitative research is essential as it is in quantitative research. However, the means to achieve an adequate sample size in qualitative research differs from quantitative approaches. Blaikie (2018) offers a critique on the methodological issues used to justify sample size in qualitative research pointing out that there is a tendency of associating certain assumptions, logic, forms of data, and methods of data collection and analysis.

Further, researchers working with qualitative methods are often criticised for not justifying the rationale for determining sample in their research projects. For example, in a review of 83 studies in information systems (IS), Marshall, Cardon, Poddar and Fontenot (2013) found limited justification for the choices made in determining sample size in these studies. Others argue that determining an adequate sample size in qualitative research is a matter of judgment and experience and that depends on the particular research method, sampling strategy employed, and the intended research outcome, and the ability to reach saturation (Marshall, Cardon, Poddar, & Fontenot, 2013; Sandelowski, 1995; Sandelowski, 2001).

In qualitative research, saturation is regarded as the primary mechanism for achieving an optimal sample size. However, saturation only occurs when adding more participants to the study does not result in additional perspectives or information. Glaser and Strauss (1967) proposed the concept of saturation for achieving an appropriate sample size in qualitative research, but the authors do not offer specific threshold values. Later research recommended some guidelines. Patton (1990) offers a pragmatic view, suggesting that an adequate sample in qualitative research is depended on the time allotted for the research project, resources available, and study objectives. Several and often contradictory numbers are offered in the literature based on the nature of research design. For example, Morse (1994) suggests a threshold sample size of approximately 30-50 participants in research employing an ethnography, while Creswell (1998) suggests only 20 – 30, and in a phenomenological approach, he recommends 5 to 25, while Morse (1994) suggests at least 6. Crouch and McKenzie (2006) consider a sample size of not less than 20 participants adequate on the basis that such a sample with homogenous characteristics can help a researcher build and maintain a close relationship with participants and the issue being researched. While Guest, Bunce, and Johnson (2006) recommended that 12 participants in homogeneous groups and claimed that such a number would enable the researcher to achieve a point of saturation.

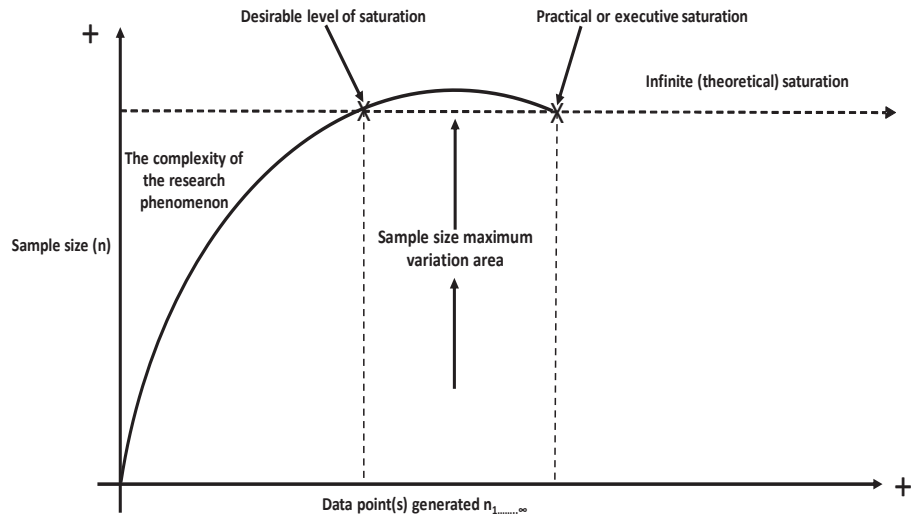
Sim, Saunders, Waterfield and Kingstone (2018) noted there are four approaches used in the literature as a basis for determining sample size in qualitative research. These include the use of the rules of thumb, conceptual models, and numerical guidelines derived from empirical studies, and statistical formulae. The authors critique these approaches on the basis that they tend to neglect philosophical assumptions relating to the differences in many of the qualitative approaches to research. They also pointed out while determining sample sizes before the research is a practical endeavour, it is an inherently problematic approach, especially in more interpretive models of qualitative research.

Clearly, there is no shared agreement on what constitutes an acceptable sample size even if research design is used as the primary criterion for determining sample size. Also, there are no widely acceptable formulae for computing sample sizes similar to those used in quantitative research. Most of the numbers are guided by the rule of thumbs or the researcher's experience. Ultimately, sample size determination in qualitative research has been reduced to a matter of judgement and experience rather than an evidence-based decision.

### **2.1 Saturation and data adequacy**

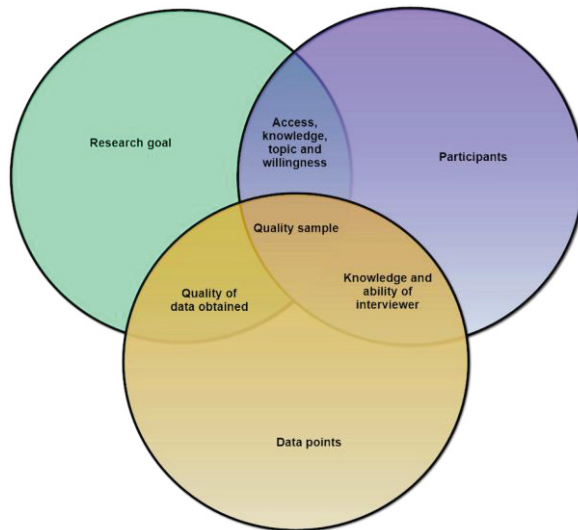
Saturation means "data adequacy", and it is claimed for when new data does not reveal any new information. Generally, there are two types of saturation (data and theoretical saturation). A theoretical saturation (theory building as in a grounded theory) occurs when all themes are explicitly accounted for and elaborated (see, for example, Glaser & Strauss, 1967). For many years, saturation has been heralded as the gold standard for determining sample sizes in qualitative research. As Saunders et al. (2017) indicated, "saturation has attained widespread acceptance as a methodological principle in qualitative research" (p.1). Despite the widespread tendency to use saturation to justify the adequacy of the sample, the concept is misleading, especially, when it is used as an end in itself. In other words, saturation is theoretically a point along the research journey, not a destination. It is a critical point where the researcher determines when to stop collecting data, not necessarily a decision one makes taking into account the quality of data gathered.

In this paper, it is argued that the quality of data is critical irrespective of the number of participants or interviews obtained. This is further determined by the nature of the question being researched. For instance, a complex and multilayered problem such as people’s attitudes about climate change requires discussions with many people with various backgrounds and experiences (politicians, activists, scientists, farmers, etc.), as different people might have different views about the topic of climate change. As shown in figure 1, a point of saturation is theoretically desirable but practically unachievable since there is always new data to be discovered and data can never be genuinely saturated (Wray, Markovic & Manderson, 2007). In other words, researchers only can claim to have achieved saturation but clearly—the literature does not explicitly say how it can be achieved. Limitation in resources (time, access to participants, funding, researchers and participants experiences, etc.) makes saturation elusive.



**Figure 1:** The theoretical notion of saturation

The application of saturation within the grounded theory literature seems to provide clear guidance about what constitutes theoretical saturation (O’Reilly & Parker, 2018). However, research shows that some studies that have claimed to have applied saturation failed to use it correctly (Carlsen & Glenton, 2011). The notion of saturation was a concept developed for theory building—it should not be used as “the gold standard” for other qualitative approaches. Instead, effort should be directed toward achieving data adequacy (see figure 2).



**Figure 2:** Elements of data adequacy

The adequacy of data is proportional to the number of participants in a qualitative study, which in turn is the function of the complexity of the nature of the research question. More complex research problems require a more complex research design to achieve an adequate data set. It is also worth noting that various research

designs have different recommended sample sizes (Daniel, 2018). Some qualitative research design such as ethnography and grounded theory might require a large sample size before a researcher can claim an acceptable level of saturation (see figure 2), others may only need a much smaller sample to claim a point of saturation (Daniel, 2018).

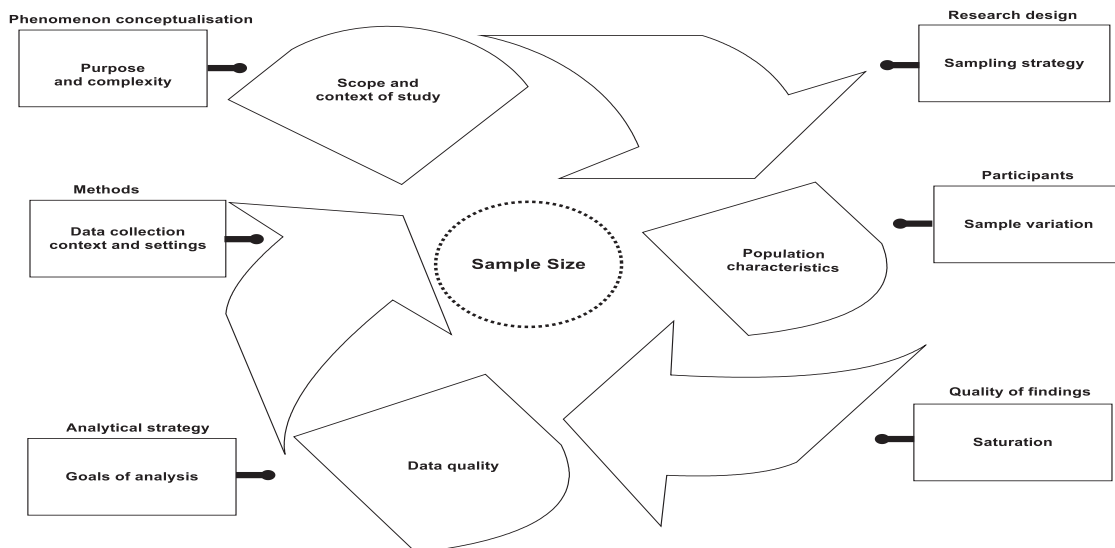
Participants' engagement is also affected by the degree of the sensitivity of the topic, and the possible rewards or sanctions associated with discussing it. Sample sizes are also dependent on the type of research design used in a study. Some design such as ethnography or grounded theory might require a large sample size before a researcher can claim to have achieved an acceptable level of saturation (see table 1). Conversely, depending on the type of research problem and the characteristics of the participants, saturation cannot be achieved, but instead, the researcher can claim it (see figure 1.)

**Table 1:** Research design and average desirable sample sizes (Daniel, 2018).

Research Design	Research question/purpose(example)	Unit of Analysis	Average recommended sample size
<b>Grounded theory</b>	What does being successful mean to CEOs in various business sectors?	<b>Theory</b>	$\geq 60$
<b>Phenomenology</b>	What is the lived experience of a fish?	<b>Lived experience</b>	$\leq 10$
<b>Ethnography</b>	How does the labour government address the issue of homelessness in NZ?	<b>Culture</b>	$\geq 50$
<b>Case Study</b>	To what extent does the massive collection of users' data online contributed to more than half of user privacy violation in the 21 <sup>st</sup> century	<b>Case</b>	$\geq 36$
<b>Narrative analysis</b>	What contributes to the level of stress experienced by South African doctors working and living in Canada?	<b>Story or stories</b>	$\leq 15$
<b>Content analysis</b>	Analysis of the emergence and growth of an online sense of a community supported by social media technologies	<b>Meaning of an object/artefact</b>	$\geq 28$

### 3. The Maximum Variation (MV) Framework

Adequate sample sizes in a qualitative research study vary widely along different critical factors. The maximum variation (MV) framework describes fundamental elements that are essential for understanding issues underlying sample size considerations in qualitative research studies. The elements that constitute the MV framework are theoretically grounded in the literature. The elements include the nature and purpose of the study, the design of the study, participants, and methods used to collect data, analytical strategy sought and the quality of data required (see figure 3).



**Figure 3:** Determinants of sample size in qualitative research

The wide range of factors in the MV framework can have a different impact on the number of participants needed in a study. The application of MV requires the researcher to consider the entire process of qualitative research to claim for saturation. For example, recruiting participants who might have the same experience and interests in a phenomenon can relatively provide the same quality of data than those with more or less exposure. Therefore, within the MV framework, the main task of the researcher is to recruit individuals who might provide rich and different perspectives and settings to maximise the findings of the research. In this respect, saturation is not sought for, but rather diversity or multiple perspectives of individuals are considered essential (Creswell, 2002; Sandelowski, 1995). One way of ensuring diverse or multiple views are included in a study is to carefully perform an initial assessment of the profiles of the potential participants and recruit individuals who are knowledgeable about the research topic.

The MV framework suggests that during the stages of sampling, data collection, analysis, as well as interpretation, at each stage the researcher needs to look at the quality of the data, the participants, settings, context, location, time, events, incidents, activities, activity, experience, and processes, as well as the researchers' knowledge about the phenomenon. Also, it is essential that the researcher engages in the analysis of data immediately once data is collected. MV takes into the account that gathering diverse views from participants enriches the quality of findings, and provides the researcher with a large degree of confidence in extending the meaning of a phenomenon to similar contexts. Furthermore, since the theoretical and study population in most qualitative research is relatively unknown, using MV is critical because of the need to be inclusive, and participatory than pursuing representative.

As shown in figure 1 above, the adequacy of data is by large influenced by numerous factors including, the nature of research questions asked and how it is conceptualised. A broader problem (central phenomenon) requires more data and possibly diverse participants. While some qualitative research projects do not have specific research questions, often the early part of the data collection is directed to the development of targeted research questions. Exploratory studies, in particular, would require the researcher to spend a significant amount of time and resources collecting and analysing data.

Also, the context in which data is collected needs to be considered. For instance issues of structural power relations among participants can affect the quality of interaction between the researcher and the participants and ultimately the quality of data collected. It is, therefore, crucial that the researcher thinks at each step of the data collection, how this might influence the quality of data collected. For instance, when researching a sensitive topic (e.g. job satisfaction), the researcher may consider carrying out one-to-one interviews instead of a focus group or any method that makes others uncomfortable sharing their insights. In many instances, the quality of data collected depends on the experience the researcher has in the topic and their ability to facilitate productive discussion with participants. New or inexperienced researchers may fail to effectively engage participants during data collection adequately, resulting in poor quality of data. New researchers need

to consider acquiring interview or facilitation techniques and familiarising themselves with the subject under investigation.

#### 4. Pedagogical Intervention

To validate the framework, a professional development workshop focused on addressing issues of sample size in qualitative research was developed. The workshop was offered five times to 156 participants at a research-intensive university in New Zealand. Participants explored the meaning and value of the sample size in qualitative research and reviewed current practices associated with the determination of sample size. The workshop included extensive discussions of the concept of saturation and how it relates to the issues of sample size in the qualitative research literature. Participants were then showed how they could use the MV framework to address issues of sample size in a qualitative research project.

Each workshop lasted for three hours, which is the standard time allocated to delivering some of our professional development workshops at our university. To gain an understanding of the pedagogical value of MV, and its contribution to learning qualitative research, the workshops were evaluated. We used an evaluation instrument with five standard questions the university uses in evaluating professional development workshops (see questions in table 2)

**Table 2:** Standard evaluation questions

Questions	Rating/response
1. How valuable do you think this workshop has been for you?	Extremely valuable 1 2 3 4 5 Not valuable at all
2. Overall, how effective have you found the facilitation of this workshop?	Extremely valuable 1 2 3 4 5 Not valuable at all
3. What were the best things about this workshop for you?	----- -----
4. How could this workshop be improved?	----- -----
5. What topics would you like addressed in future HEDC workshops?	----- -----

#### 5. Evaluation and student experience

Generally, participants found the workshops valuable and enjoyable as one participant commented, “I obtained an overall insight into the qualitative study, it is beneficial for the fresh researcher in this field like me. The demonstration of the discussion on saturation adequacy during the workshop was excellent.” Others mentioned that after participating in the workshops, they gained a better understanding of the theoretical and practical issues around the concept of data saturation, which are generally not covered in a semester-long course on research methods.

Further, the evaluation data suggests that the workshops provided participants with clarity around the concept of saturation in qualitative research. “Getting a greater understanding of the difficulties around the concept of data saturation.” “The breadth of discussion about the topic was helpful - the facilitator tries to address as many relevant issues as possible.” Also, participants indicated that the MV framework helped them to deeply reflect on the quality of data as opposed to the number of participants from which data is obtained.

*“The depth, the angle, the ability to consult my participants after I have articulated their data and possible protocols. I might also need to consider how I should look at data according to 'what I have' instead of 'whom I have' ... these viewpoints are exciting things I think most graduates need to iron out in the very early stages (good refresher and reminder courses would be terrific!).”*

Overall, 97% of the workshop participants said the workshops were extremely valuable, and 100% found the delivery of the workshop extremely effective (see table 3 and table 4).

**Table 3:** Participants and workshops ratings

Workshop	Total number of participants (n)	The overall value of the workshop to participants (%)	Overall quality of teaching rating (%)
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Workshop 1	26	100	100
Workshop 2	21	100	100
Workshop 3	21	92	100
Workshop 4	10	92	100
Workshop 5	78	100	100

**Table 4:** Average ratings of the value and teaching effectiveness on each workshop

Workshops (W)	How valuable do you think this workshop has been for you? (average rating)	Overall, how effective have you found the facilitation of this workshop? (Median rating)
W1	1.3	1.4
W2	1.6	1.6
W3	1.6	1.6
W4	1.3	1.4
W5	1.2	1.5
Overall median	1.4	1.5

Participants reported that they found issues of sample size in qualitative research hard to address. However, after participating in the workshop, they were able to think beyond issues of saturation. As one participant said: *"I enjoyed just thinking outside the box and being challenged that there is not a point of saturation or that saturation is infinite. I also liked how I might need to consider looking at my data that I have collected."*

The teaching evaluation data also suggests that the discussion on saturation within the context of the framework (see figure 1) was valuable. *"Getting to understand better that there is no boundary as far as saturation in qualitative research is concerned than for the researcher to decide where to end taking into consideration some factors including time and resources."* *"This, workshop questions the underlying thinking around saturation in qualitative research and opens up many opportunities to explore ways to address the issues of sample size in qualitative research better."* *"This workshop helped me to think about issues of sample size and theoretically claim for saturation in qualitative research."*

Participants reported that the pedagogical approach used to the delivery of the workshops was effective. *"The facilitator's explanation was clear and easy to follow."* Others found the nature of engagement and interactions in workshop useful; *"I appreciated the knowledge and the interactivity with the facilitator and the other participants in the workshop."* and others appreciated the opportunity to ask questions: *"I found the workshop interactive. I could ask questions which were specific to me, and the lecturer took time and answered them well."* The interactive mode of workshop facilitation was considered appropriate, since, workshop participants are diverse, and have different interests, it is critical create group activities that allow participants to share their experiences with others, and adapt the materials to their own experiences (Yakovleva & Yakovlev, 2014).

### 5.1 Suggested pedagogical enhancement

Although the workshops evaluated extremely well, participants suggested some ways to improve the workshops. They indicated that they would have liked to see more examples that relate to their domains in the discussions. For instances, one participant said; *"I liked the pace, the explanation and the progression of the presentation but perhaps more examples or comparison to interesting yet daily relate-able things ... for example the visual on the saturation video was worth remembering. The professor was trying to make :)."* Another participant recommended the use of more practical cases. *"Take some practical cases as examples and show how to calculate the sample size."*

Smaller group work was suggested. *"Include more tasks that could be done in small groups (not just pairs) - e.g. could discuss as a group what might make responses more variable (i.e. what features of participants or questions would mean that larger sample size is needed)."* There was also a suggestion that the time used to deliver a workshop needed to be shortened. *"I think 3 hours is a bit too long. I understand that there are many topics to be covered, but I would suggest limiting it within 2 hours."* However, others said three hours is too limited to cover all of the important issues of sample size. *"There is never enough time to delve into the*

*topics...as always, the workshop could easily be a full day and still be very worthwhile. There were comments on the facilitation of the workshop."*

Some participants requested more clarity on the content of the workshop. *"If the contents on the slide were more clear and visible, it would be better. It would be good if some reading materials can be circulated before the workshop to provide some basic understanding of the structure of the workshop and the topics that are going to be discussed."* Overall, the results of the evaluation of the workshop suggest that the MV framework is useful in addressing issues relating to sample size in qualitative research. Participants also reported an enhanced learning experience in the workshops.

## **6. Discussion and conclusion**

This article reviews current practices and discourses in the literature relating to issues of sample sizes. It then proposes a theoretical framework based on the principles of maximum variation in the determination of an adequate sample size in a qualitative research project. The MV framework suggests that during sampling, data collection, analysis, as well as interpretation, the researcher needs to look at their data in context of participants, settings, context, location, time, events, incidents, activities, experience, and processes, as well as the researcher's knowledge about the phenomenon being studied. The maximisation of the quality of information requires determining the appropriateness of data generated, and its adequacy (Morse and Field, 1995). Whereas in quantitative research the issue of generalisation and external validity are critical, generalizability is not sought by the researcher in qualitative research, as such the focus is less on sample size and more on sample adequacy (Bowen, 2008; O'Reilly and Parker, 2012). Marshall, Cardon, Poddar and Fontenot (2013) proposed the concept "information power" to guide researchers to determine adequate sample size for qualitative studies. Information power indicates that the more information the sample holds, relevant for the actual study, the lower number of participants is needed.

The MV framework as it relates to sampling suggests that the researchers need to recruit individuals who might provide rich and different perspectives and settings to maximise the findings of the research. In this respect, data saturation is not the principal focus but instead pursuing multiple perspectives from participants to achieve a diverse data set (Creswell, 2002). The MV technique captures a wide range of perspectives relating to issues of sample size. It is a search for variation in perspectives, ranging from those conditions that are a view to being typical through to those that are more extreme.

The sampling procedures in qualitative research are predominantly based on non-probabilistic methods; the purpose is not to count opinions or people but explore the range of opinions about an issue (Gaskell, 2000; O'Reilly and Parker, 2012). In other words, sampling in qualitative research aims at the maximisation of the richness of information (Kuzel, 1992) and so the sample size required does not entirely depend on the number of people but rather the quality of information each in the sample together with the researcher can generate. It is also determined by the nature of the topic and the resources available (Gaskell, 2000).

It is suggested that in qualitative research, it is essential to generate rich, dense, and focused information on the research question to allow the researcher to provide a convincing account of the phenomenon (Curtis et al. 2000). The context in which data is collected can also influence the quality of data obtained. In qualitative research, the researcher and the participants are the sources of information. Therefore, verbal fluency, clarity, and explicatory abilities are central to the possibility of gathering in-depth information (Horsfall & Hayter, 2014; Patton 1990; Sandelowski, 1995).

The MV framework describes critical elements that are essential for understanding issues underlying sample size considerations in qualitative research studies. Although the elements that constitute the proposed framework were drawn from the literature, the framework itself is being validated empirically. Based on the workshops evaluations, we are including more practical examples illustrating how sample sizes can be obtained and maximised and continue to collect more empirical data to update the framework.

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## Availability of data and materials

Due to privacy requirements, the data for this study is not available for sharing.

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# What Constitutes a Good Qualitative Research Study? Fundamental Dimensions and Indicators of Rigour in Qualitative Research: the TACT Framework

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**Abstract:** What constitutes a good qualitative research study? There is a growing interest in qualitative research methodology as a legitimate approach to research questions across disciplines and domains. However, a common concern raised and discussed within qualitative researchers and others outside the methodology discipline is the characterisation of qualitative findings as anecdotalism, unsystematic, and inconsistency, likely leading to the implausibility of research outcomes. Assessing the quality of research to ensure rigour in the findings is critical if findings are to contribute to theory and be utilised in practice. However, teaching students concepts of rigour and how to apply them to their research is challenging. This paper presents a generic framework with four critical dimensions—Trustworthiness, Auditability, Credibility and Transferability (TACT) intended to guide postgraduate students and those new to qualitative research methodology, a framework to enable them to explore the key dimensions necessary for assessing the rigour of qualitative research studies. Also, the paper presents a checklist questions against each of the dimensions. TACT is intended for teaching the issues of rigour to students and those new to qualitative research. Work presented in the paper is part of a large research programme investigating the pedagogy of research methods in higher education.

**Keywords:** Rigour, trustworthiness, auditability, credibility, transferability

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## 1. Introduction

The growing diversity in the applications of methods of research requires a critical look at the way we assess the quality of research to ensure that the findings are rigours and useful is critical. For many years, there is a growing consensus in the literature regarding the importance of ensuring rigour in qualitative studies (Guba and Lincoln, 1981; Lietz et al., 2006; Morse et al., 2002; Morse, 2015; Noble & Smith, 2015). It has been shown that achieving rigour in qualitative study ensures that findings are useful to apply to solve problems (e.g. patient care) (Noble & Smith, 2015). Tong and Dew (2016) suggested that qualitative studies must be conducted using a rigorous approach and that the findings need to be comprehensively reported.

However, the literature has been polarised regarding how rigour can be achieved in qualitative research. Some researchers have advocated for the development of universal sets of criteria and standards for judging qualitative research based on interpretative ontologies (Shenton, 2004; Koch et al. 2014). It is suggested that the outcome of a qualitative research study needs to undergo the same quality assurance process similar to the one used in quantitative research (Morse et al., 2002). However, the adoption of general guidelines for evaluating qualitative research studies has been criticised because such standards would likely ignore the complexity of the individual qualitative research project (Yardley, 2000; Dixon-Woods et al., 2004).

Unlike quantitative research where measures are aimed at establishing objectivity, replicability, validity and reliability, qualitative research methodology is an epistemic enterprise, whereby the researcher interprets the meaning of data based on what is observed, enriched by personal reflections and experiences of the social world, relative to what is being studied (Cypress, 2017; El Hussein, Jakubec, & Osuji, 2015; Hartman, 2015; Noble & Smith, 2015).

Despite the polarised views on how to establish rigour, the provision of a generic framework is necessary for teaching research methods to students (Daniel, 2018). Also, a general framework can serve as a decision-support for new qualitative researchers, since conducting meaningful qualitative research involves making many decisions, some of which might appear complex for the new researcher, as such providing a set of criteria is essential. This paper presents a theoretical framework developed to help postgraduate students and those new to qualitative research use a set of indicators to guide them in assessing rigour in qualitative research. The framework composes of the following indicators or dimensions: trust, auditability, credibility, and transferability (TACT). From the four dimensions, a list of questions is provided to the users of the

framework to help them think about various issues that can contribute to a rigorous and useful outcome of research findings.

## 2. The TACT framework

The TACT framework (see Figure 1) is grounded in the literature; it is aimed at addressing issues of rigour in qualitative research studies and provide a general understanding of students the fundamental dimensions of rigour. Also, teachers of qualitative research methods can use TACT as a teaching tool. TACT can also be used as a guide for those interested in inspecting the quality of research outcomes (e.g. peer-review of qualitative research methods or examination of doctoral theses). The intent of developing TACT is congruent with Koch (2006) guidelines for evaluating the quality, and Morse et al. (2002) proposal for considering as a quality measure in enhancing research utility. Furthermore, some of the elements in the framework are similar to those suggested in the work of Johnston et al. (2017).

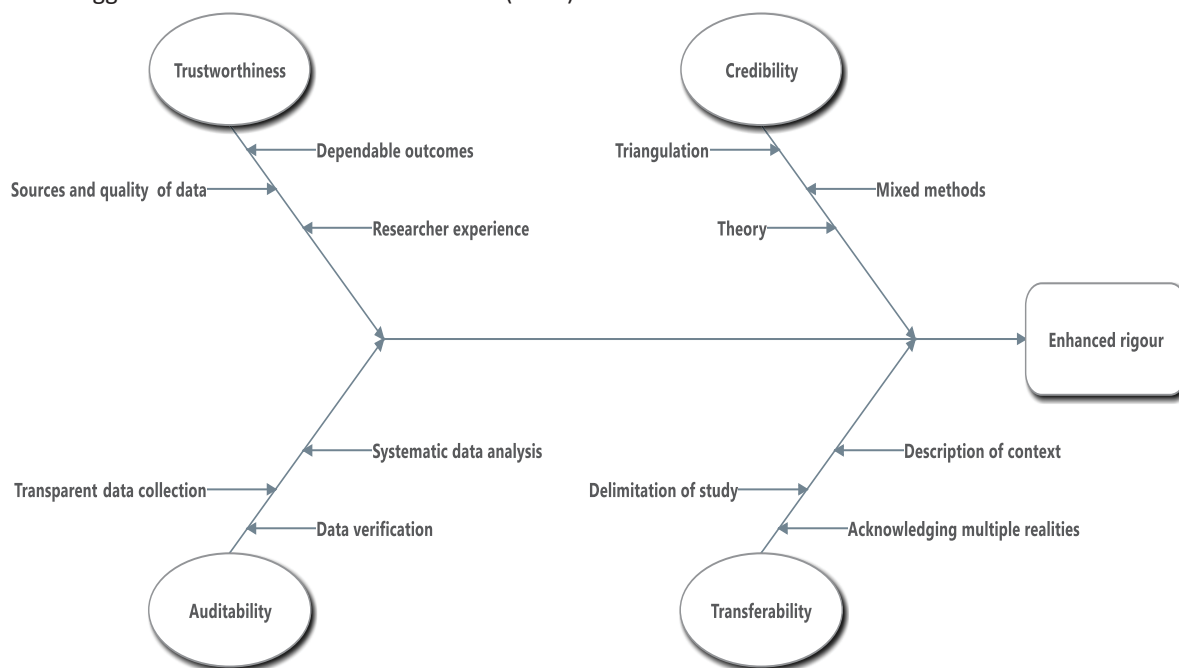


Figure 1: TACT model for assessing qualitative research outcomes.

### 2.1 Trustworthiness

Trustworthiness is an essential concept in qualitative research methodology. The concept of 'trustworthiness' portrays quality in qualitative research. It underpins both rigour in the research process and the relevance of research (Finlay 2006). Trust can be viewed as an element necessary for enhancing the understanding and interpretation of research findings; it is a means by which other researchers can establish a level of confidence in the quality of an investigation and the outcome of the research. Qualitative researchers are encouraged to demonstrate different ways in which the outcome of their studies can gain a certain level of trustworthiness in findings.

Various models of trust have been developed in the past, but those models have not necessarily evolved with time and the discipline of qualitative research. For example, Guba's (1981) presented a model for establishing trust in qualitative research based on the identification of four aspects of trustworthiness: (a) truth value, (b) applicability, (c) consistency, and (d) neutrality. However, applying this model in qualitative research is not a straight forward process. It requires the researcher to use different strategies and to ensure that findings are situated within views generated by participants (Lietz et al., 2006; Morrow, 2005; Sinkovics et al., 2008). Also, the researcher needs to acknowledge personal biases and to accept that the outcomes of any qualitative research are subject to multiple realities. For instance, the researcher establishes the trustworthiness of data analysis by explicitly stating their assumptions about the phenomenon being studied, and stating the experiences they bring to guide their understanding of the data through reflexivity (Meyrick, 2006).

Reflexivity requires the researcher to provide a detailed account of their experiences, assumptions about the phenomenon being explored, and the process and circumstances that inform the data collection process. Krefting (1991) added the notion of neutrality as an essential criterion for ensuring trustworthiness in a study.

Neutrality is a degree to which findings reflect participants' views outside of researchers' personal opinions. Further, trustworthiness is achieved when users of the qualitative research project can develop a better interpretation of the outcomes of a study and relate such outcomes to their experiences.

To achieve trustworthiness in qualitative research outcome, it is necessary to employ a systematic process in organising and analysing data (e.g. coding, identifying shared themes, categorising themes, and demonstrating a clear theoretical or logical rationale for eliminating overlapping themes) (Creswell & Miller, 2000). In some cases, it would be required to demonstrate consistency in coding and interpretation of data through intercoder or interrater reliability. It is worth noting that establishing trustworthiness in qualitative does not imply subscribing to one unified ontology, or embracing a universal epistemology, but rather demonstrating an acceptable degree of integrity in the process and outcome of the study. As Bailey (2007, p. 181) noted: "trustworthiness does not mean that the reader necessarily has to agree with the researcher; rather it requires the reader to see how the researcher arrived at a conclusion".

Achieving trustworthiness of a study in the context of the TACT framework requires the researcher to acknowledge their prior assumptions and experiences they bring to the study. Also, they need to demonstrate a systematic approach in the analysis of data. It also requires the verification of preliminary findings with participants to ensure that the outcome reflects views of the sample. It is also necessary to triangulate findings against other methods of inquiry.

## **2.2 Auditability**

Auditability is a critical dimension for establishing rigour in qualitative research, which requires a high degree of transference. Auditability refers to a systematic procedure for collecting, analysing and interpretation of data. The literature suggests two types of auditability: external and internal auditability. External auditability is typically carried out by users of the research outcome. It is performed when the researcher's findings or conclusions are suspected. Moreover, internal auditability relates to the ability to address methodological issues including stating clarity in research question, and how questions are aligned with particular research design, analysis of data, and conclusions drawn (Halpern, 1983). Field notes, memos, and pictures can be used to help researchers to achieve auditability.

Auditability facilitates reflection on the researcher's part to ensure that the process of undertaking the research is fully documented and described. Auditability is the provision of record keeping of all decisions made during the research process. Guba and Lincoln (1989, p. 243) termed this as an "audit trail". Typically, researchers interested in achieving an acceptable level of audibility utilise field notes, memos, and pictures, etc. during clear data collection, analysis—coding pathways and reporting.

To achieve auditability within the TACT framework, the researcher needs to describe how they engaged with the entire process of undertaking the research. It requires the qualitative researcher to illustrate the research evidence clearly and document their thought processes that led to the conclusions in a study. For instance, such a process would require the researcher to describes who was involved in the study, how was data was collected, where and when data was collected and how the analysis was undertaken.

## **2.3 Credibility**

The notion of credibility in qualitative research is similar to internal validity in Quantitative research methods. Internal validity in the quantitative research tradition refers to an approximation of the truth of inference.

Unlike validity, credibility requires establishing that findings are dependable, relevant, and congruent – reflecting a researcher's intended reality that is obtained from the perspectives of those who provided data (Sandelowski, 1986; Patton, 2002). Noble and Smith (2015) pointed out that it is crucial for all qualitative researchers to incorporate strategies to enhance the credibility of a study during research design and implementation.

Credibility can be achieved through a careful description of the data analysis and verification of sources of data obtained with participants from whom data was collected. It also requires researchers to anchor the unit of data analysis in the central phenomenon being investigated. Creswell (2009) suggested that “the final report or the description or themes” are taken back to the participants for verification purposes, a process referred to as member checking (Loh, 2013).

Credibility can be achieved through peer debriefing, attention to negative cases, independent analysis of data by more than one researcher (inter-rater reliability), or the use of verbatim quotes. (2018). Further, credibility is achieved by the researcher describing his or her experiences as a researcher and verifying the research findings with the participants (Cope, 2014). Others suggested that credibility is obtained with a prolonged and varied engagement with the research setting (Forero, et al 2018).

Triangulation is considered a critical element of credibility in qualitative research methods. Triangulation relates to the convergence of data obtained using two or more data sources. It is used as a mechanism to substantiate findings by using one method and, corroborated the outcome with another, and also to gain a comprehensive view of the phenomenon (Cope, 2014).

The credibility dimensions in the TACT framework entails the use of data verification, description of the researchers approach to the data analysis, engaging with participants during data analysis to verify the preliminary outcome of the analysis, the use of direct quotations, and triangulation.

#### **2.4 Transferability**

Transferability in qualitative research suggests that findings from one study can be applied to other settings or groups of people (Houghton, Casey, Shaw, & Murphy, 2013). Transferability in qualitative research is congruent to the concept of reliability in a quantitative methodology (Lincoln and Guba, 1985; Golafshani, 2003). However, in contrast to the quantitative epistemology, transferability does not advocate for generalability (Lincoln et al. 2017; Smith & McGannon 2017; Smith, 2018) but instead, it suggests that findings gained in a particular context can offer valuable lessons to other similar settings. Transferability provide evidence to the reader with evidence to assess the integrity of research outcomes (Cope, 2014).

Transferability requires ensuring that the content of the interviews, the behaviours, and observed events are typical or atypical of the lives of the participants (Krefting, 1991). It also requires the provision of details about the study participants, e.g. demographic information, their experiences (Hannes, 2011), and.

Further, to demonstrate transferability, the researcher ensures that the recruitment and selection of a sample are based on expert knowledge of participants, and participants are knowledgeable about the phenomenon under study (Forero et al. 2018). Another means of ensuring transferability is to compare the characteristics of the participants or informants to the demographic information available on the group being studied. In other words, a qualitative study is considered transferable if the findings have meaning to individuals not involved in the study and readers can associate the results with their own experiences (Cope, 2014). Qualitative researchers use thick descriptions of real-life settings and understandings of participants’ worldviews not only to achieve transferability but to help bridge the gap between practitioners and researchers (Ospina, Esteve, & Lee, 2018).

It is critical that achieving transferability means researchers need to clearly articulate the delimitation of the research and the context in which it is undertaken, including the choices researchers made during the process of data collection and analysis, and possible challenges they might have faced.

To use the TACT framework, a checklist of questions (Table 1) were developed against each one of the TACT’s dimension. The questions are aligned with the most critical aspects of research methodology (research problem, methods, data analysis, and findings). Teachers of qualitative research methods can use this set of checklists as an educational pedagogic tool in a workshop setting; therefore, no scoring system is required at this stage until the more data collected on the dimensions, and the checklists are subjected to experts validation.

**Table 1:** Checklist of examples of questions on each of the TACT dimensions

Key: Trustworthiness (Tr); Auditability (Au); Credibility (Cre); Transferability (Trf)

	Research Problem	Methods	Data analysis	Findings
<b>Tr</b>	<ul style="list-style-type: none"> <li>-Is the research problem framed within the context of related literature?</li> <li>-Does the researcher clearly describe their background?</li> <li>- Does the researcher's background have any degree of familiarity with the phenomenon and the setting under the proposed study?</li> </ul>	<ul style="list-style-type: none"> <li>-Are the methods used for data collection appropriate for the type of research problem proposed?</li> <li>- Was the recruitment strategy appropriate to the aims of the research?</li> </ul>	<ul style="list-style-type: none"> <li>- Has the relationship between the researcher and participants been adequately considered?</li> <li>-Can it be verified that data presented reflect the views of the participants?</li> <li>-How data was analysed (codes, themes, theory, etc.)?</li> <li>-Are the themes extracted from data match examples of the quotation?</li> <li>-Is the analysis based on an established and relevant method?</li> </ul>	<ul style="list-style-type: none"> <li>-Are the outcomes of the research dependable?</li> <li>-Is the conclusion drawn from the data adequately relate to the research problem?</li> <li>-Does the conclusion recognise that multiple realities exist?</li> <li>-Has the researchers' outline personal experiences and viewpoints that may have resulted in methodological bias?</li> <li>-Do the findings clearly and accurately presents the participants' perspectives?</li> </ul>
<b>Au</b>	<ul style="list-style-type: none"> <li>-Is the research problem clearly described?</li> </ul>	<ul style="list-style-type: none"> <li>-Was the data collection process transparent?</li> </ul>	<ul style="list-style-type: none"> <li>-Is the data analysis process systematic?</li> <li>-Are the decisions made during data analysis fully described?</li> </ul>	<ul style="list-style-type: none"> <li>-Are the findings verified against the stated research problem?</li> <li>-Does the researcher clearly describe how data was collected, where, when, how and how the analysis was undertaken?</li> <li>- Can another researcher follow the decision trail used by the investigator in the study?</li> </ul>
<b>Cre</b>	<ul style="list-style-type: none"> <li>-Is the research problem adequately justified?</li> </ul>	<ul style="list-style-type: none"> <li>-Can data be triangulated?</li> <li>-Are the methods used for data collection appropriate?</li> </ul>	<ul style="list-style-type: none"> <li>-Is the method (s) of data analysis theoretically grounded?</li> <li>-Does the study lend itself to a multidisciplinary approach, likely to be investigated from a number of different theoretical perspectives?</li> </ul>	<ul style="list-style-type: none"> <li>-Can finding be theoretically verified?</li> <li>- Can the accuracy of the findings be established?</li> <li>- Is there any congruence between findings with assumptions?</li> <li>-Do the findings contribute to any new knowledge?</li> <li>-Can a degree of neutrality in the research study's findings be established?</li> </ul>
<b>Trf</b>	<ul style="list-style-type: none"> <li>-Is the research problem clearly described?</li> <li>-Is there a detailed description of the study context, times and phenomenon</li> </ul>	<ul style="list-style-type: none"> <li>-Are the methods of data collection clearly described?</li> <li>-Are participants' characteristics clearly described?</li> </ul>	<ul style="list-style-type: none"> <li>-Is the approach for data collection clearly described?</li> </ul>	<ul style="list-style-type: none"> <li>-Are multiple realities acknowledged?</li> <li>-Is the currency of findings and applicability transferable to similar context?</li> </ul>

### 3. Summary and future research directions

Qualitative research methodology is considered a legitimate approach to the exploration of complex phenomena across disciplines and domains. Despite its growing contribution to methodological scholarship, the value of qualitative research methodology has come under constant criticism. Critiques describe qualitative research as anecdotal, bias, and limited in its generalisability power (Cope, 2014; Hayashi, Abib & Hoppen, 2019). The lack of validity and replicability of qualitative research findings is attributed to the inconsistent application of methods and a lack of a universal set of criteria to judge the qualitative of research findings (Barbour, 2001; Daniel, 2018; Filep, et al 2018).

Researchers engaged in qualitative research rarely provide an adequate justification for the methods they use (Noble & Smith, 2015). For instance, Saunders and Townsend (2016) examined 798 articles published



between 2003 and 2013 in ten top and second tier academic journals in the area of organisation and workplace research and identified a lack of transparency in reporting participants selected for studies and justification for sampling choices in half of the studies. Similarly, Ospina et al. (2018) conducted a systematic review of 129 qualitative research methods in the public administration, published during five years (2010–14), and confirmed the inconsistency in reporting methodological decisions. The lack of consistency in the use of qualitative research methods threatens the credibility of the methodology. It is, therefore, vital that the quality of research needs to be checked against the soundness of the problem formulation, research design, theoretical depth, methods for data collection, and the conclusion drawn.

The notion of rigour in qualitative research maintains the research integrity and possibly increases the authenticity of research outcomes. Also, gaining rigour in qualitative research puts a degree of accountability on the researchers during the research process and the outcomes. Moreover, providing standardised indicators for assessing quality, enables users of qualitative research outcomes to systematically inspect, and verify, the relevance of particular research findings.

This paper presented the TACT framework as a useful proxy for exploring dimensions of rigour in qualitative research. TACT appeals for the establishment of a standard set of indicators that can be used to explain issues of rigour to students and those new to qualitative research. Also, the TACT framework can be utilised as a tool to guide academic peer-review of qualitative research studies. In order to implement TACT, various strategies can be employed by the researcher guided by the checklist provided in table 1. For instance, to ensure the trustworthiness of a study, the researcher applies a systematic approach to data analysis and reporting.

Similarly, being systematic and transparent during data analysis and other aspects of the research can provide others with the ability to audit trail the research findings. Moreover, the ability to verify the findings of a research study enables consumers of research findings to establish the credibility of the research outcome.

Further, since qualitative research does not often include generalised findings from a sample to the population from which the sample is withdrawn, the researcher can provide a detail description of the context of the research, background information about participants to allow for transferability of findings from one context to similar contexts or groups. Transferability provides readers with rich, and vivid quotes from the participants to substantiate the interpretations of outcome (Cope, 2014).

Though the framework has been used in a number of workshops, there is an ongoing verification of its efficacy for learning rigour. It is possible that TACT might not widely applicable to all qualitative research problems since the concept of rigour is contested in the qualitative research methods literature. In the future, it is essential to validate the checklists, a group of experts will be invited to examine and refine the checklist and use the outcome to guide students in learning the fundamental indicators of rigour.

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## **Availability of data and materials**

Due to privacy requirements, the data for this study is not available for sharing.

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# Non-Scrum Implementation: A Methodological Approach for Small Companies

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**Abstract:** In software companies, delivering software as fast as possible is a requirement and Agile methodologies intend to fulfil this requirement. One notable methodology is Scrum, which is an Agile methodology that is broadly used in the industry for self-organizing teams, dividing roles and measurements of performance, and cycles. This work aims to demonstrate a complementary methodology through a real use case in a small scale company targeting specifically the limitations of Scrum in small companies. Those complementary aspects were based on the Balanced Scorecard technique implemented, combined with a point based heuristic and thus the final result is extensible for any kind of small company. Our approach is compared with the results of a survey for Scrum method evaluation, which is also subject to a qualitative, quantitative, and also a limitation analysis. In essence, a flexible Scrum methodology is presented with some complementary features that show improvement in the short term strengthened by a field analysis.

**Keywords:** Software development, project management, survey, empirical study

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## 1. Introduction

Agile is a trend and has seen an increased adoption for software development in several projects (Putnam, 2014). One branch of Agile, Scrum, is a current trend methodology in terms of software development and has evolved with several variations. The key points of Scrum, as defined by the Scrum Guide (Schwaber and Sutherland, 2016), are the roles, artifacts, events, and rules. More notably, according to the authors, these are the immutable characteristics of Scrum and a partial implementation of them is not Scrum.

Scrum theory is originally based on the process control theory and empiricism. Ergo, Scrum core ideas come from, for example, definition of Sprint, task, delivering of artifacts, and Roles (who evaluates or develops the required tasks). The empirical intent is derived from a hands-on approach and in fact, Scrum derives from Ken Schwaber and Jeff Sutherland companies' implementation.

Scrum, although appropriated for real needs and teams, has some limitations (Egbuchiri, 2013) which might impose restrictions and therefore some adaptations of its implementation are necessary (in other words not following all the methodology by the book). Examples of real limitations include negative evaluation from some developers and managers, which sometimes see Agile as not the best approach for a project with a limited budget or a limited time-frame (Wells, 2013).

Considering that partially implementing Scrum, e.g. without all its events, is not implementing Scrum according to the authors (Schwaber and Sutherland, 2016), we aim therefore to create an evaluation of a non-Scrum implementation. To be specific, we used the roles, the artifacts, events and rules in a Scrum way. However, these were not necessarily completely used, since for some specific conditions they seem unnecessary or redundant.

This work consequently aims to summarize and to evaluate a schematic way to implement this non-Scrum Agile methodology. Ultimately this work applies the core aspect of Scrum theory, empiricism, to the methodology which, whilst respecting the Scrum-values adds some complementary aspects of other tools, namely Balanced Scorecard (BSC) views and a point-based client perspective. In a similar approach to Microsoft's approach to add engineering practices on top of the Scrum framework (Williams, 2011) we called our implementation non-Scrum methodology, in a wordplay with the authors of Scrum (Schwaber and Sutherland, 2016).

## **2. Literature review**

The literature below summarizes the main points in Agile methodologies, comparing them with the waterfall process.

### **2.1 Agile manifesto**

From the twelve principles of the Agile manifesto (Beck et al, 2001), simplicity, fast delivery and face-to-face implementation were certainly the factors that popularized this contribution. The twelve points of the manifesto are of huge importance for contemporary Agile methods such as Scrum and XP, where each embraces different aspects of the Manifesto.

### **2.2 XP**

Extreme Programming, XP, is an Agile approach for software development that requires peer-to-peer validation and development (Wells, 2013). It is based in a set of simple rules and started to be developed in 1996. According to the report of VersionOne 12th State of Agile Report, XP is considerably less adopted than Scrum VersionOne (2018), with only 1% of companies adopting it. XP demands quality code as core base, and adopts the use of code review, pair programming and dense use of unit testing. In contrast to Scrum, some nomenclature changes also occur such as the cycles in Scrum are called iterations in XP. Notably, there is an undeniable dissimilarity accorded to the prerogative of the adoption of new user features (Reiss,undated).

### **2.3 Scrum**

Scrum was created by Ken Schwaber and Jeff Sutherland in the 1980's (Schwaber and Sutherland, 2016). Later on, Ken Schwaber created Scrum.org, which is an organization that trains and provide certifications for managing projects with the Scrum methodology. Certification is a more formal way to demonstrate knowledge of the methodology; - however it is not technically required for managing development projects. As explained before the core aspects of Scrum are the Scrum team, values, events and artifacts.

The difference of Scrum and XP are the following: the duration of development cycles, flexibility, features priority, and the emphasis of XP on engineering practices (Cohn, 2007). The main difference between the two is on the values that are highlighted in each, as Partogi (2018) explores. XP requires continuous integration and daily deployment on production. In fact, the majority of the XP rules is non-negotiable.

### **2.4 Implementation example**

In terms of implementation, Putnam (2014) describes a case study of Scrum utilization in the company Quantitative Software Management Inc., and demonstrates how the process can work but without ignoring situational factors. Business Achievers, which is a business portal and network hub, discusses implementation for small businesses and concludes that it is also applicable to small businesses depending on the context and other factors (Business Achiever, 2017). In a small software house, the client is a small business (B2B or not) or even one person, and although they are involved in the development process, the individual might have some difficulties preparing for regular meetings, considering allocation of human resources and scheduling.

### **2.5 Limitations**

Egbuchiri (2013) presented a list of limitations of Scrum, especially in terms of budget costs and delivery on time. From this work we can see it being mainly used for small teams since a high amount of communication would be required, as well as the amount of resources needed for frequent client meetings. This was taken in consideration when we developed the survey and the non-Scrum version, mainly to address these exact issues.

### **2.6 Waterfall**

Previously, the development method could be seen as the Waterfall method (Navy Mathematical Computing Advisory Panel, USA and Office of Naval Research, 1956; Rovce, 1970: Bell and Thayer,1976). This was used since 1956 especially for large software projects on phases development (Navy Mathematical Computing Advisory Panel, USA and Office of Naval Research, USA,1956). It was formally defined by Rovce (1970) and the name was coined in 1976 (Bell and Thayer, 1976). The Waterfall methodology was widely used for several projects until the gradual adoption of Agile methodologies, subsequent to the later publication of the Agile Manifesto (Beck, 2001). Waterfall is basically a series of sequential phases: *Plan, Build, Deploy, Review*.

## **2.7 Waterfall in small companies**

However, small companies do not necessarily have a flexible work scheme or finite requirements and therefore the Waterfall methodology might not be useful or applicable in all cases and can be misused as discussed by Pawel Brodzinski (Brodzinski 2011). In fact, there is a debate if the use of an Agile methodology is totally applicable for small companies) Nevertheless, after deliberation we came to the conclusion that Agile is undoubtedly useful considering practical terms such as:

- flexible scope: since changes will occasionally occur during the scope.
- follow up meetings with clients: which would elucidate issues that might arise.

## **2.8 Balanced Scorecard aspect in Agile**

The Balanced Scorecard was originally developed by Dr. Robert Kaplan of Harvard University and by Norton, Kaplan and Norton, (1992), as a framework for measuring organizational performance using a more balanced set of performance measures. It aims to develop financial and non-financial methods- see Lawrie and Cobbold,(2002);Balakian (n.d.).

## **3. Our implementation**

Below is the description of all our implementation in a company, with details, starting with a summary of the company, the software development process beforehand, and then an enumeration of issues within the company. Finally we present the Agile solution implemented, describing the proposed points based approach.

### **3.1 The company**

The company was a small (less than 10 people) software-house that aims to sell software (especially mobile applications) and focused their work on a business-to-business model. Also, they had some projects directly from both governmental and nongovernmental organizations. The team had about five developers, QA and organization, and a few freelancers, to avoid the project getting delayed.

### **3.2 The application delivery**

The company used to deliver software using the Waterfall process, i.e. the client defines a series of requirements in a document and later they sign a contract for the delivery of the software. The development process, meetings, and deliverables are agreed on by both parties in a contract that includes a detailed schedule. This process is detailed in the Figure 1.

### **3.3 The issues**

The problem with the As-it-Was approach, detailed in the Figure 1, was the so called non-ending B2B projects, since the clients would come and change aspects of the project during the previously scheduled follow-up meetings. As a result, the budget would increase considerably. Additionally, but equally important, was the direct disagreement on the proposal request and the real needs of the client after the project had started. This would cause them to be dissatisfied with the project and necessitated a return later on.

Finally, some juridical problems might emerge, since it was necessary to add more hours/work in order to finish the mobile applications. The client, on the As-it-Was model, i.e. Waterfall method, was not proactively acting to finish the project, but rather, delaying the process, which would delay the delivery deadline.

### **3.4 Agile as solution**

Since the problem was the delay to projects completion mainly because of client's intervention, the solution was to implement an Agile development methodology so that the client could become involved and proactively assist the development of the software. The main change to the development process was then to change the company's methodology replacing it by an Agile methodology for project delivery. However, since some requirements of a full Scrum implementation were unnecessary, we delimited the process for the necessary meetings (Scrum events), added a points-based heuristic, and added Balanced Scorecard aspects for the client's involvement. All those aspects are detailed below and summarized in the Figure 2.

### **3.5 Scrum**

This methodology is an Agile method, where the project is based in a series of Sprints, which are the cycles of development that have 1-3 weeks. It is based on three Scrum Ceremonies (Sprint planning, daily scrum, Sprint review and retrospective review), three Scrum Roles: (PO, Scrum Master and Team developers, testers, writers) and three artifacts (product backlog, Sprint backlog and burndown chart.) Finally and more

importantly, it relies on Scrum Pillars: transparency, inspection, and adaptation (Schwaber and Sutherland, 2016).

### 3.6 Software house vs consulting company models

The change also meant a paradigm change for the company from a software house to a consulting company. A software house delivers software, a deliverable and functional object whilst a consulting company is paid for an hourly rating development. Therefore, for contractual reasons, it is not possible to create a methodology that the client could change the whole scope regularly, mainly because the company was not a consulting company, but rather a software house. In summary, in order to implement the new methodology, the company needed to adapt itself and its contracts from a software delivery approach to an hourly rate development process.

### 3.7 Roles

In terms of role changes, previously the meetings with clients were to validate the software functionalities and now the client's role was to proactively intervene in the development of the project to fulfil their requirements. Another change was the addition of more meetings, in order to be closer to the clients, but more effective and shorter in terms of duration, i.e more frequent and faster meetings.

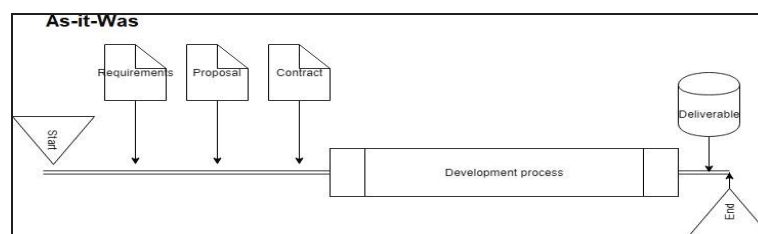
### 3.8 Delimitation (or restrictions)

The main restrictions, in other words, limitations of the original methodology were:

- Client meetings: The client's team was small :therefore sometimes frequent meetings were not necessary.
- Unlimited : the client could not come and change the scope of the project all the time, so some restrictions were necessary (difference between software house vs consulting company).
- Everyday meetings with such a small team, of 5 people, were unnecessary: therefore we reduced this requirement to one meeting per week (instead of everyday).
- The Scrum Master was a rotating role, to avoid personal interference of one person with another (rule of law).

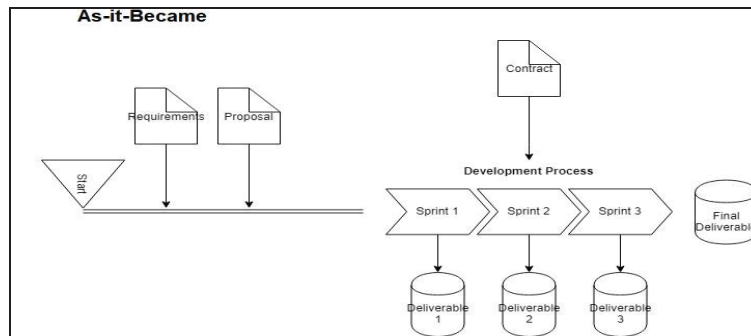
### 3.9 The internal development process: As-It-Was and As-it-Became

The simplified diagrams before the change, and after the change, are presented below in the **Figure1** and in the **Figure 2**.



**Figure 1:** As-It-Was diagram

First the client contact: the software company is to deliver a certain product, which is not delimited in a scope. The next stage is then to get the necessary requirements and to create a proposal, which can be changed at any time before signing the contract. The contract then is elaborated with a list of requirements, a schedule, and a list of deliverables, as well as contract penalties on both parties in case of a withdrawal. The development is done on the list of requirements and a deliverable is made, later is sent to the client, which will agree or disagree according to the requirements and the contract clauses.



**Figure 2:** As-It-Became diagram

The initial approach with the client did not change, thus the client still made contact first. The next stage is to get the initial requirements and develop a proposal. The contract is elaborated with the set of requirements based on the development process, instead of deliverables. The development is done in a list of tasks on the backlog, which is divided in Sprints with small deliverables, and with the client’s direct involvement and approval. After the backlog list is completed, a final deliverable is then produced, which will validate, i.e. agree or disagree, according to the requirements and the contract clauses. The final deliverable is a major iteration of the small deliverables for each Sprint.

### 3.10 Non-Scrum points methodology

After analysing the Scrum methodology, we decided to implement it in the company in a process that was done gradually and carefully. Nonetheless, some small changes were added on the original methodology, specifically related to the issues and limitations of the company and the client’s needs. Examples included: the absence of daily meetings, with a Sprint review being less technical, direct client involvement and evaluation and features description. Furthermore, we effectively added some aspects of the BSC to include the customer at each Sprint to get him or her involved as a point based system was added.

From the implementation we did, we came to the conclusion that it could be extended for any small company that has the same restrictions/limitations as ours. Then we extended our approach by creating a point based system, giving more flexibility and the table of points is partially reproduced in Table 1.

Each aspect we changed was ranked and measured in a way that the framework can adjust it to be team specific, client specific and project specific. The Balanced Scorecard aspects were added directly on the Sprint review.

**Table 1:** Distribution points table

Action	Points
Pair-programming	1
Meetings	2
Sprint Evaluation	2
Delays on the Sprint	-1
Minimal Points	10

#### 3.10.1 Point system

On each Sprint the Scrum Master and the Product Owner will come close to 10 points at least. So the client can understand the need for meetings, clear reviews and can improve the next Sprint by providing a grade. The points of the previous Sprint is used for the calculation of the current Sprint, then the penalties carried, for example, not delivering all the tasks on the previous one. The system has minimal points based on the minimal aspects that the Scrum Master and the Project manager consider important.

- Minimal points: 10 per sprint



- Measurement of points: The points are basically a way to visualize several aspects of the progress, straight from the KPI from BSC.

### *3.10.2 Points heuristic above the Scrum methodology*

The non-Scrum methodology we implemented is a point based system on top of Scrum, made to specifically mitigate some issues of the clients. We think this methodology could be implemented as a variation of Scrum, specifically for small companies aiming to speed-up the unnecessary reading and evaluation that we need to do. The methodology is detailed here Egbuchiri, (2013) and since it is point based, it aims to be flexible.

### *3.10.3 Balanced Scorecard aspects*

From the perspective of the software development, Scrum is complete and sufficient. However, for the client's need it was necessary to add details related to decisions for long-term. The Sprints therefore were done using the four perspectives of the Balanced Scorecard: financial, customer, internal and growth perspective. Consequently we developed a complete software for the client, aiming for a long term success.

## **3.11 Validation survey**

Considering that our implementation is limited to the company, which constitutes a drawback as a contribution for others to apply our points-based system, we created and deployed an online survey to collect information (de Melo and Mendes, 2018). The survey aims to validate some aspects of Scrum from the developer's perspective, specifically in terms of overall evaluation and the limitations of this methodology. The main points we wanted to compare are the developers' perspective with our implementation and the limitations, as showed in section 3.8 Delimitation (or restrictions).

## **4. Result**

The results are detailed below and are divided in two parts: the survey results and the non-Scrum methodology.

### **4.1 Non-Scrum methodology**

The results of the new methodology are: delivery of the software is faster and reliable, implementing Agile increased the client participation without overly demanding meetings and reviews. The clients overall demonstrated a clear satisfaction and better involvement from the previous approach, no qualitative or quantitative measurement was made in terms of satisfaction.

#### *4.1.1 Delivery of software*

The Agile approach used for the company was able to be implemented as a different way to deliver software specifically targeting the issues described in the section 3.3 The issues.

#### *4.1.2 Agile implementation*

The small changes on the original approach were not significant on the methodology, but only a minimal variation and therefore we firmly state that is still a Scrum implementation.

#### *4.1.3 Client's perspective*

The points system was a simple way for the client to understand the Scrum development aspects for each Sprint, even without previous knowledge. The points simplify the evaluation of the client at the end of the Sprint and there is less of a required for specialist knowledge. From the client's perspective, the process improved and the satisfaction of participation on the process increased. As Sutherland and Sutherland mention, happiness is the core indicator of future performance (Sutherland and Sutherland, 2014).

### **4.2 Survey results**

The results of the online survey will be available online, aiming to evaluate and to validate Agile methodologies showed the following information as presented below:

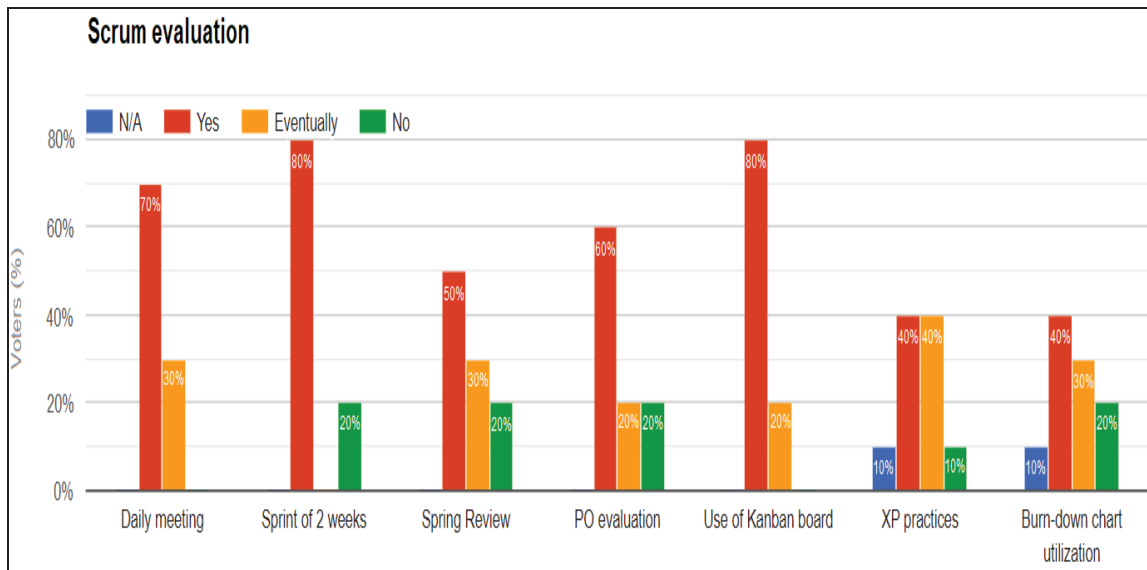


Figure 3: Scrum detailed evaluation

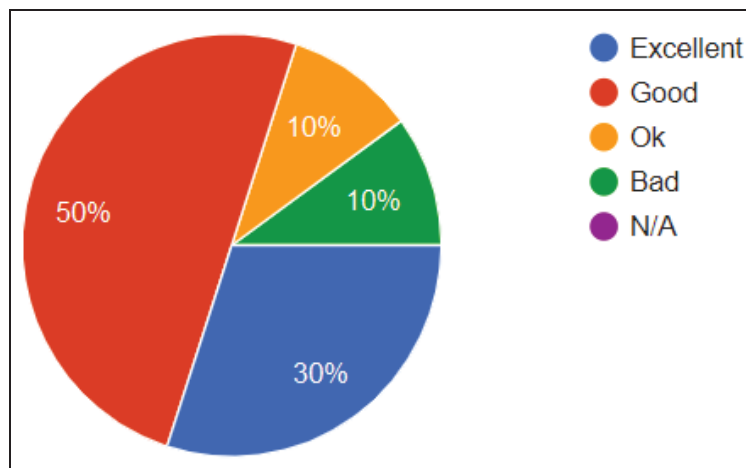


Figure 4: Overall Scrum evaluation

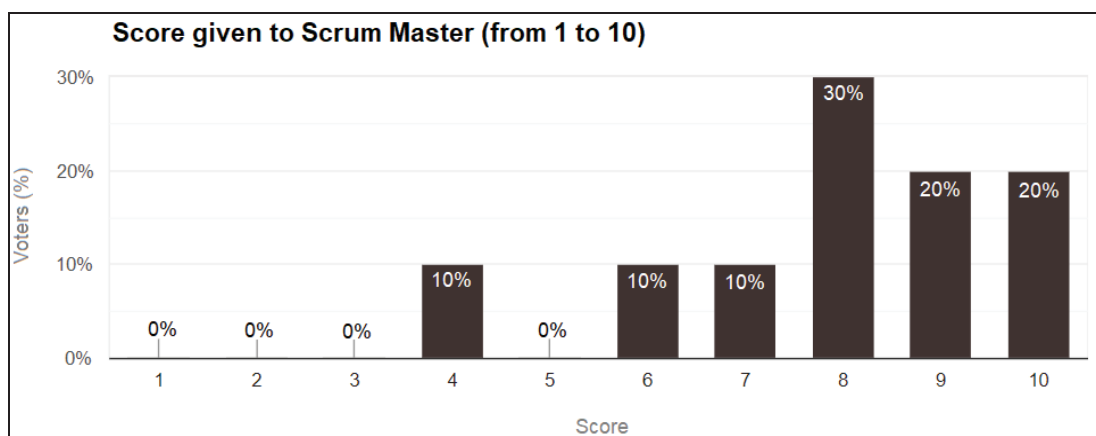
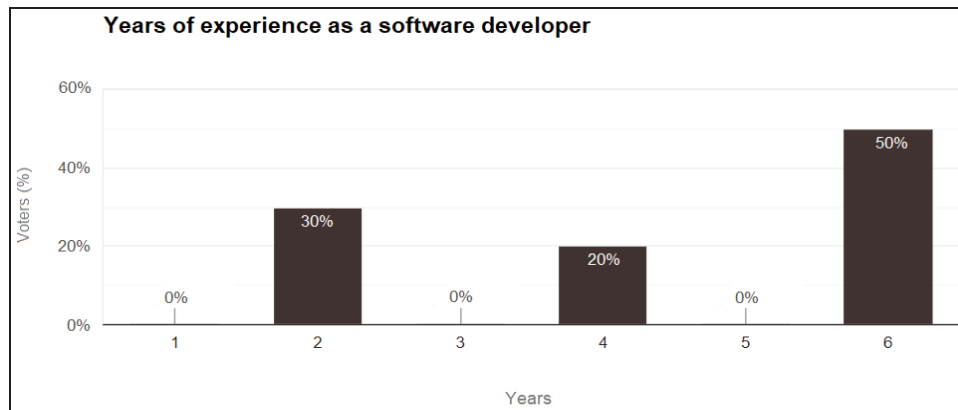


Figure 5: Evaluation of Scrum Master



**Figure 6:** Distribution of the years of experience

#### 4.2.1 Quantitative results

- Number of people: 20
- Average development time: 4.4 years, as shown on **Figure 6**.
- Average results for each question:
- Overall the participants have a good perspective of Scrum, 80%, and only 10% consider it bad, as shown on **Figure 4**.
- Most of them have daily meetings, Sprint of 2 weeks, Spring review, PO evaluation, use of Kanban board:-
- About the XP practices utilization and the Burn-down chart, not all developers have corroborated with a positive answer, which is interesting since this tool is one of the main tools for the framework. This is shown on **Figure 3**.

#### 4.2.2 Qualitative results

- "Although the Scrum Master had fulfilled all the requirements, he didn't evaluate him as 10/10".
- "The daily meetings are unnecessary and overrated".
- "I like the methodology but I personally dislike my PO".

#### 4.2.3 Overall evaluation

The survey showed the influence of cultural evaluation - for example, we found a tendency to not give the full marks for the Scrum Master, even if he/she fulfill all the duties. In other words, some evaluate the Scrum Master not with 10/10 as one of the participants highlighted on the form, based on the Figure 5 and the 4.2.2 Qualitative results.

## 5. Discussion

Below several aspects about the survey and our implementation are analyzed and criticized.

### 5.1 Survey

A qualitative result showed a deterministic way to evaluate and implement the scrum methodology in real small companies, as well as the transition from Waterfall to Agile methodologies can cause some difficulties for the client but also for the company. Another interesting aspect is the selection process of a software developer to be the Scrum Master, aiming to strengthen different aspects of the rules over personal aspects of the position, i.e. the rule of law.

In summary, the survey was a tool to validate our modifications and to have a more complete evaluation of Scrum. Furthermore, the survey corroborates some aspects that we changed in our implementation.

### 5.2 Non-Scrum points methodology

The main discussion point is that we needed to change the methodology and whether it is still Scrum. Although the name states it is not (a wordplay with the original Scrum methodology), we maintain it is still

Scrum because it agrees with the Agile manifesto (Beck, 2001), and all the Scrum values were followed (Schwaber and Sutherland, 2016).

The second main discussion topic is the points system: “Was it really necessary to create a point system”. Our variation of the Scrum methodology is to aim for small companies and the points based approach is based on a simplification to facilitate the client’s interaction. The client should be completely aware of the system implementation and must be consulted specifically in terms of budget and meetings limitation.

## **6. Limitations**

The limitations showed below can be stated from the research, considering the several aspects of the study and the company.

### **6.1 The company’s profile**

The company was small and therefore the size is a limitation for a complete comparison with other teams in terms of Scrum implementation. Therefore, the size of the company impacts directly on the sizes of the projects it can handle and a larger Scrum comparison cannot be done.

### **6.2 Qualitative measurement and quantitative measurement**

It was considerably difficult to create specific measurements for qualitative analysis and as a result, we developed a survey for validation, which is indeed a more quantitative than qualitative measurement. From the quantitative measurement, the only issue is the size and the population distribution, which cannot be used to generalize the overall view of developers.

### **6.3 Non-Scrum methodology**

The main issue regarding our implementation is the exact definition of Scrum by the creators (Schwaber and Sutherland, 2016), in which it is stated that if the entire implementation is not there, then it is not Scrum. The point based system was elaborated to simplify the general development process for the client in a meaningful and simplified way.

### **6.4 Survey limitations**

This might not be the best measurement of the developers’ perspective, since we combined different perspectives and background without providing context for specific questions. However, a survey is still a valid tool for evaluation and was able to highlight valid points and interesting perspectives in terms of overall Scrum evaluation.

## **7. Conclusion**

We described in this work the company, the implementation, and the results related to our non-Scrum implementation, which were necessary due to the size of the team, the time for the clients and the budget. There are several conclusions to this study, regarding the implementation, the method, the evaluation and the future implementations similar to this one.

First of all, Scrum is a valid, solid, and very useful methodology that might, in some cases, represent some non-flexible approaches or limitations for all occasions (for example the reduced budget). Scrum comes as an Agile tool for delivering fast and reliable software.

The BSC addition to the Scrum implementation was an axiom for the construction of the points based system and might not be valid in all cases, for example, when there is similar software or when the clients know exactly what they want. The bigger the clients and more aware of the Scrum methodology, the less is needed for the points system, and not every aspects of the BSC was necessary for the methodology.

In order to have a complementary view of the methodology and to validate our perception we developed a survey, which was an interesting key factor for us to validate certain specific points of Scrum from the developers’ perspective. The results corroborate some of our modifications, for example, the rule to have a rotating Scrum Master mitigates personal evaluation.

As a whole, the contribution, a point-based methodology, is an interesting interpretation of the Scrum guide, which follows the Manifesto and aims to fulfil a specific niche of Scrum methodology for small companies or for certain groups. As clarified and exemplified on this paper, the Scrum Master role being rotating might be another discussion point which is not directly related to the non-Scrum methodology itself, but it is relevant to verify in further studies.

In summary, we conclude by stating the limitations of a full Scrum implementation for a small company, the possibility to use our approach (non-Scrum methodology) for delivering software and corroborated by the information gathered on the online survey. It was also pointed out in previous bibliography, the context and the implementation of the methodology might not be optimal. In other words, the transition and the new methodology must be explained to the client clearly since they would be the main beneficiaries of the process but evidently the transition period and the roles in the transition must be clarified to the team.

## **8. Disclaimer**

The name of the company was withheld to avoid any marketing or commercial utilization of the name and other resources or monetary value. This paper represents only the views of the researchers and does not represent any company view of the methodologies or frameworks utilized.

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# Using Q methodology to test Perspectives and Attitudes: Experiences from a Study about Content Marketing

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**Abstract:** This paper is intended to propose the use of Q methodology in more business and management studies to complement existing business methodologies and will explain the different steps of a typical Q study with examples from a study on content marketing. It will be argued that this methodology is best suited to clarify and depict the scope of different viewpoints about a topic and hence provides numerous opportunities to researchers. Q methodology was introduced more than 80 years ago by psychologist William Stephenson to study human subjectivity but presently researchers do not sufficiently adopt this methodology to study perceptions and attitudes about business and management topics. For example, this mixed method has not become a common business and management method yet despite mounting scholarly work in various disciplines over the years which could perhaps be ascribed to the complexity of this method. In addition to illustrating how Q methodology could be used to test perspectives and attitudes, it will be argued in this paper why and how Q methodology can be a valuable business and management research tool to reveal individuals' subjectivity about a topic. The adoption of Q methodology could enhance conventional research methods such as surveys, interviews and focus groups. Since Q methodology uses the strengths of both qualitative and quantitative methods to study the subjective perspectives of participants, it becomes possible to gain insight in a much richer way than with a survey or interviews because it combines a robust qualitative element with the quantitative tool. The qualitative part categorises the variety and span of subjective opinions on the topic, while the quantitative part objectively confirms and analyses similarities and differences in the subjective viewpoints of individuals by means of a Q factor analysis. It is thus an exploratory, inductive and deductive methodology suitable for small populations of participants; strengthened by the statistical operation of Q factor analysis. However, there are also several limitations to using Q methodology which are highlighted with examples.

**Keywords:** content marketing, mixed method, factor analysis, Q methodology, Q study

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## 1. Introduction

It was a British physicist, who later also obtained a qualification in psychology, William Stephenson, who introduced Q methodology to the scientific community as far back as 1935. Stephenson, an assistant to the statistician Charles Spearman, at the time had a keen interest in how subjectivity in any situation could be uncovered. He used his knowledge of factor analysis to develop the method. Consequently, Q methodology is a simple yet innovative adaptation of Spearman's traditional method of factor analysis. Stephenson (1953) first introduced his conceptualisation of the methodology in a letter on 24 August 1935 to the editor of *Nature*, a British scientific journal. Steven Brown (1980) from Kent State University then played an active role in making Q methodology more recognised by the larger academic community. McKeown and Thomas (1988) contributed to the work of Brown (1980) by facilitating comprehension of this method's application. What makes Q methodology unusual is that all perspectives and attitudes can be transformed into operant factors. In other words, participants' viewpoints are not merely intuitive or random but reflect their own deep-rooted views on a topic (McKeown & Thomas, 1988:40). In contrast to the rating of items in a questionnaire during a survey, participants in a Q methodological study compare opinion statements while rank-ordering them to reveal their own opinions and beliefs (Paige & Morin, 2016). Brown (1986) admits that although subjective opinions cannot be validated, Q methodology, as foundation for "the systematic study of subjectivity," gives some structure and form to these opinions in order for them to be observed and studied. A Q study is typically concerned with the range of ideas on a topic including widespread differences and how these differences relate to each other (Burke 2015). Following much debate and diverse views, it was only recently that scholars have recognised Q methodology as a mixed method after comprehending the value of blending the qualitative Q sorting process and the quantitative Q factor analysis (Ramlo, 2016).

Although it is not yet a conventional method, Q methodology at present is globally applied in academic studies across various disciplines and has an active online community, an academic journal and annual conferences. The paper is structured as follows. First, the purpose of the Q study and what content marketing entails is briefly explained. Then follows a discussion of personal experiences and a conclusion.

## **2. Explaining the background to the Q study and conceptualising content marketing**

The Q study on content marketing was necessary as at the time of the study there were still numerous attitudes, beliefs and ideas of what this new marketing paradigm entails and how it should be applied (see Holliman & Rowley, 2014). The term “content marketing,” coined by Pullizi (2010) from the Content Marketing Institute (CMI), is a concept which is still evolving while more scholars are studying this field. As a result the meaning of this concept still changes depending on the context, thereby impeding a universal definition.

Content marketing is adopted by marketers to replace interruptive advertising and to attract more attention to the brand with resonating content, hence using unobtrusive pulling – and not pushing – techniques to attract consumers to brand content (see also Liu & Huang, 2014). This emerging field adopts theories of marketing communication, integrated marketing communication (IMC) and relationship marketing (Cronin, 2016).

It is generally accepted that with content marketing, brand content is created and pulled to consumers who are already interested in the topic. Relevant brand content by means of brand stories encourages social word of mouth (SWOM), more brand awareness and loyalty. The brand stories link purposefully to the company's brand personality (persona) to catch the interest of consumers, based on relevancy to their own lives. These brand stories are then shared in social media or via e-mail subscriptions using search engine optimised (SEO) blog posts, infographics, free e-books, whitepapers, videos, podcasts, case studies, webinars, press releases, interviews and testimonials, to name but a few (Pulizzi, 2010; 2012). Content marketing thus provides numerous cost-effective opportunities and brand touch points to address target audience's needs (see Kus 2016).

The purpose of the study on content marketing was twofold: to confirm and analyse similarities in the current subjective viewpoints about content marketing and to isolate the dominant perceptions.

## **3. Steps followed in the Q study**

A Q study consists of different interconnected phases. The researcher first collects a concourse and then selects a sample of statements representative of the ideas that are communicated in the discourse. A concourse involves all discourses about a topic under investigation. Participants are selected from the target population relevant to the discourses and they are asked to sort statements in their perceived order of significance. This is known as Q sorting. The participants' sorts are finally calculated by means of a Q factor analysis that categorises the variety and span of subjective opinions (Du Plessis, Angelopulo & Du Plessis, 2006; Le Roux & Du Plessis, 2014).

### **3.1 Collecting the concourse**

In Q methodology the concourse represents ideas, comments and conversations about a specific topic but is not restricted to words only. A concourse thus might also include images, videos, art or music and may be collected from both primary and/or secondary sources (Brown, 1980). For this study, the concourse consisted of secondary sources to identify the current range of attitudes, ideas and beliefs that globally existed amongst content marketers about content marketing and included articles, blog posts, commentaries and academic studies.

### **3.2 Selecting a Q sample to compile statements**

Once a concourse has been collected, the researcher has to compile statements for empirical testing that are representative of the range of ideas that are reflected. This can be done with either an unstructured or a structured Q sample (Brown, 1980). With an unstructured Q sample a researcher has more flexibility and can select the statements at random. However, with a structured Q sample a more rigorous process is followed to group statements into theoretical categories to be representative of the concourse.

Data for this study were gathered by means of a systematic, structured Q sample to provide some focus and to place boundaries on the topic of content marketing. Statements were grouped into theoretical categories that were representative of the concourse – reflecting the broad range of opinions, beliefs and attitudes about content marketing. This was done by applying Fisher's (1960) methods of experimental design to the samples (Brown, 1996). These theoretical categories with sub-categories included purpose (strategic integration and value), content (authentic narrative and co-creation), distribution (reciprocal and relevance) and result (sentiment and conversion). From each of these sub-categories five statements were identified

from the concourse, resulting in 40 statements (narratives) about the topic. A typical Q sample usually consists of 40 to 80 statements (Watts & Stenner, 2005). These 40 statements were piloted and the necessary refinements done prior to implementing the study – to achieve optimum balance, unambiguousness, suitability and straightforwardness. Paige and Morin (2016) confirm the importance of constructing the Q sample in a way that provides validity to the study.

### 3.3 Selecting participants

A Q study requires participants (referred to as the person sample) to rank-order a set of statements (selected from the Q sample) from their individual viewpoints. This is known as Q sorting. The person sample in this study consisted of individuals across the globe, who are familiar with content marketing. They were purposively sampled to complete an online Q sort. A purposive sample was used to provide insight into issues of central importance to this study (see Emmel, 2013). It was furthermore important to obtain a wide range of perspectives and attitudes from information-rich cases, to identify the most current patterns of beliefs, attitudes and ideas about content marketing (Cross, 2004). Participants were given instructions and a password to visit a website (Qstudycontentmarketing.com) that explained the nature of the study and how to complete the Q sort. In addition, the ethical considerations of this study were explained, which participants confirmed when they participated.

It is important to note that in Q methodology the results are not generalised to the larger population, but to a particular perspective. Since the emphasis is on the nature of the segments of subjectivity that exist and the extent to which they are similar and dissimilar, it is not essential to have large numbers of participants – only enough to identify the existence of a factor (Brown, 1980 & Du Plessis, 2005).

### 3.4 Sorting the statements from individual viewpoints

Participants are now asked to sort the statements from their own, individual viewpoints which constitute the qualitative component of Q methodology. The ranking of the statements by an individual is known as that individual's Q sort, and reflects the individual's response to the statements. Before sorting the statements, participants are given a "condition of instruction" to guide them while sorting the statements from their viewpoints (McKeown & Thomas, 1988:30). Based on the research problem, the researcher has to decide whether to give participants a "forced-choice" or "free-sort" condition of instruction. For example, with a forced-choice condition of instruction, the participant should place the statements on a Q sort grid with a space for each statement in terms of agreement and disagreement, and sort them in three piles. However, with a free-sort condition of instruction, the participants are not restricted and they may place the statements where they want to on the Q sort grid, and in more than three piles (Lee, 2017).

For the study on content marketing, participants were given a forced-choice condition of instruction to place the statements on a preset grid (see figure 1) to make the statements more stable and discriminating (Lee, 2017). The participants completed an online Q sorting process using FlashQ software that enabled them to drag and drop the statements to reflect their own viewpoints (Le Roux & Du Plessis, 2014). FlashQ is a Flash application for performing Q sorts online. Q sorting is typically done offline using cards and a grid, but has increasingly been performed online as technology has become available. The participants had to commence with the sorting process by initially dividing the statements into three piles. When three piles are used, those statements experienced as agreeable are placed in one pile to the right, those that are experienced as disagreeable in a second pile to the left and the remainder in a third pile in the middle (Brown, 1980).

Participants were required to sort the 40 statements in figure 1 along a continuum according to how strongly they agreed or disagreed with them. A nine-point relative, but not absolute scale was used, viz -4, -3, -2, -1, 0, +1, +2, +3 and +4 (see figure 1 below). It could thus be the case that a participant agreed with all of the statements; even so, a ranking was still possible (see Barry & Proops, 1999). Figure 1 below depicts the Q sort grid used for this study and one of the completed Q sorts.

-4	-3	-2	-1	0	+1	+2	+3	+4
8	3	15	14	1	4	23	6	9
34	22	40	35	32	37	17	2	33



21	20	28	13	10	26	19
	7	31	5	12	27	
	36	11	24	29	38	
		18	30	39		
			16			
			25			

**Figure 1:** An example of a completed Q sort grid used for this study depicting statement numbers which a participant arranged.

### 3.5 Q factor analysis

In Q factor analysis, the correlations between individual perspectives – and not variables – are factored to establish which sets of perspectives cluster together. Q factors thus load on individuals rather than on tests. Hence, Q factor analysis is sometimes referred to as “inverse factor analysis” – because the normal data matrix is turned on its side (Rozalia, 2008).

Data analysis for the study was done with PQMethod, which is a free statistical program tailored for Q studies (Schmolck, 2008). The intercorrelations among the different Q sorts were computed and factor analysed with Horst's centroid method. The number of factors extracted was limited to what Horst (1962) suggested as the limiting level of residual correlations (Cureton & D’Agostino, 1999). The resulting unrotated factors were rotated analytically with the Varimax rotation. Three dominant factors emerged that accounted for 40% of the variance in the correlation matrix (see table 1 below). Only pure loadings (which included Q sorts that loaded on one factor only) were considered for analysis. Pure loadings provide a focused perspective of the topic under investigation (Brown, 1996). The three factors chosen for this study were also based on an evaluation of their eigenvalues, distinguishing statements and the number of participants loading on all factors. Each factor was labelled and explained in more detail (Coogen & Harrington, 2011).

**Table 1:** An example of the factor variance and eigenvalues of the Q study on content marketing

Factor	1	2	3	Total
Eigenvalues	6.8	2.3	1.6	10.7
% explained variance	25	9	6	40

The three factors that emerged in the findings were labelled and interpreted. For example, factor 1 was named *purposeful integrated content*. The participants loading significantly on this factor believe that for content marketing it is essential to create focused and integrated content that will address their target audience's needs. They produce content to assist their target audience even before such a need becomes evident. Since they know their target audience well, they write human interest stories about their brands and integrate these stories with other marketing actions in the company to provide more focus. They follow and interact with social media influencers to attract more attention to their content. They furthermore use and build an email list to share their content to their target audience but return on investment (ROI) is not the main goal for them to use content marketing. Participants who loaded on this factor have placed the following statements on the grid that differ significantly from where the other participants have loaded on the other factors (Coogen & Harrington 2011).

**Table 2:** Distinguishing statements for factor 1: purposeful integrated content

Statement and number	Place on the grid
Statement 12: My content does not only self-serve our brand but addresses our audience's needs.	+4
Statement 27: I know exactly who to write content for.	+3
Statement 15: I produce stories from a human interest angle to make our brand more real.	+3
Statement 3: I can attract our audience better if I coordinate my content with other marketing efforts in the company.	+2
Statement 29: I know where my content fits into our audience's increasingly connected world.	+2

Statement 30: I have connections with influential social media users as they are important to distribute my content.	+1
Statement 2: I prefer to write niche content to address a specific audience.	0
Statement 22: My content is available across all our multi-channels.	0
Statement 13: My content concentrates on what the company sells to educate our audience	0
Statement 16: The stories that I write focus on what our brand stands for.	0
Statement 1: I have a clear purpose in mind when producing content.	0
Statement 18: For my content I use real people to share their experiences.	0
Statement 5: Shareable content runs like a thread through all my company's marketing activities.	-1
Statement 38: My company has specific expectations what to achieve with my content.	-1
Statement 25: I do not need to build an email list to share useful content	-2
Statement 36: Return on investment (ROI) is my company's ultimate goal to use content marketing.	-2
Statement 37: All my content always includes a call to customer action.	-2
Statement 10: To integrate my content with all elements of our marketing, sales and branding processes, will not improve the focus of my content.	-3
Statement 8: I never try to answer our audience's questions before they come up.	-3

#### 4. Discussion

The context of a study plays a role when it comes to the strengths and limitations of Q methodology; however, based on first-hand experience it can be argued that Q methodology provides a unique alternative to measuring different perspectives and attitudes to complement conventional business and management methods. Although this methodology also comes with several limitations, one of the main strengths is that the method can be applied in a systematic manner by following logical steps (see Bashatah, 2016). In addition, fewer participants than in a conventional survey make the administration less expensive than for a survey, while a Q study can also be done online. The process is also more time efficient than for, example, conducting interviews. Uniquely the method allows for great insight into how individuals feel about a topic, as participants are allowed to make changes as to where they place the statements throughout the Q sorting process. This freedom makes the participants actively involved while the forced distribution controls rater error. Especially in business and management areas where there are diverse and different views, Q methodology could bring clarity in identifying subjective views of different groups – but it is important to note that each viewpoint is treated as an individual opinion. Because the researcher is not involved in the Q sorting process, the method is suitable for business and management studies on more sensitive topics (Hughes, 2012).

A limitation of Q methodology for business and management studies is the environment in which it is trying to establish itself, for example, encouraging small sample studies. As a result the process is easily criticised by scholars because of the lack of knowledge of the method. There is also still the misguided expectation that the results should be generalised to the larger population while the results are generalised to a perspective. Furthermore, since most participants are unfamiliar with the method and have never heard of it, the process must be explained in much detail to ensure validity of the results and can therefore be time consuming and overwhelming to the researcher. There is also always the possibility of participant fatigue during the Q sorting process if a large number of statements need to be sorted. However, the main limitations of Q methodology are reliability issues which only emerge after the data analysis has been completed when the factors arise (see Plummer, 2012). It needs to be mentioned that it was very difficult to recruit participants for the Q study on content marketing since marketers generally have very busy schedules and did not want to spend their time on trying to understand the method. Researchers therefore will need to carefully consider who the participants in a study should be and what the most efficient way will be to recruit them to participate. Also, researchers must ensure that they use online Q software that is frequently updated to be compatible with the latest technology. For example, the software Q Flash has not been updated recently, which resulted in several obstacles during the study. Free Q software is often not the most suitable for a Q study, difficult to understand (for example, PQMethod), while commercial Q software subscriptions could become very expensive.

Using Q methodology to test perspectives and attitudes can nevertheless be a rewarding experience for both the researcher and participant. The participants will have the experience to give honest viewpoints about a topic in which they are interested, while the researcher will obtain rich data without fear of bias in a study (see Bashatah, 2016). Q methodology could be a functional addition to current business and management research

methods and researchers will hence benefit from short-term training to enhance understanding of how to implement a Q study.

## **5. Conclusion**

In this paper it was argued that Q methodology could be a valuable complementary research tool to use in business and management studies to investigate participants' perspectives and attitudes about a specific topic. The discussion was illustrated with examples from a Q study on content marketing. While there are numerous advantages to using this methodology in business and management studies, the process is multifaceted, time-consuming and often overwhelming to both the researcher and participants. In addition, the online Q sorting process needs to make use of frequently updated software to adhere to changing technologies. These obstacles could, however, be overcome when researchers learn from one another and by establishing best practices. The paper extends our knowledge of the different steps of a Q study while making researchers aware of the various strengths and limitations, in addition to potential difficulties of this method. Potential applications of this method could include identifying the problem areas in a business, understanding the needs of customers or employees, identifying business opportunities and altering management practices.

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# Symbolic and Non-symbolic Project Evaluation Methods

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**Abstract:** The main purpose of this paper is to provide discussion and empirical analysis of symbolic and non-symbolic methods for project evaluation. The part after the introduction is devoted to the presentation and explanation of selected aspects of using intelligent methods in project evaluation processes. In the next part, a set of non-symbolic methods based on neural networks utilized for objectives of data analysis in evaluation processes is presented and explained. Then, the author shows how symbolic knowledge representation can be used in project evaluation. Considerations are performed on the example of rule based methods. In the paper results of theoretical and empirical study conducted within the framework of business, management and social sciences are referred to. Differences between symbolic and non-symbolic methods in the context of their use in evaluation studies are indicated. At the end, possible directions of further research in the field of project evaluation methods and systems based on artificial intelligence are pointed out.

**Keywords:** project evaluation methods, knowledge representation, symbolic and non-symbolic methods, artificial intelligence, neural networks

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## 1. Introduction

Evaluation plays a growing role in business and management studies in relation to research on the assessment and minimization of risks of various types, often unique and complex activities. The notion of evaluation refers to a systematic process of investigating quality, merit and value (worth) of e.g. policies, projects, programs, performance of entire organizations as well as others. It should be implemented based on an interdisciplinary way of thinking, meaning the use of approaches, methodologies, methods, techniques and tools from various scientific disciplines in evaluation processes (Scriven, 1991). The purpose of evaluation is to make judgments, estimate the value of the assessed objects and acquire useful knowledge in the process of supporting decision-making related to improvement and corrective actions regarding projects. The methods used in the evaluation processes are also usually of a scientific nature and they are mainly associated with social sciences (Spaulding 2014).

The implementation of evaluation processes is mostly based on the application of chosen methodologies and suitable scientific methods for systematic study of improvement of the social conditions in specific political and organizational environments (Rossi Lipsey and Henry, 2018). Despite noticeable differences between scientific research and evaluation studies (Levin-Rozalis, 2003), sometimes evaluation can even be seen as a new, independent scientific discipline (Patton, 2018).

A typical project evaluation process consists of the following stages: preparing for an evaluation (planning and design), gathering credible data and evidence, making data analysis as well as reporting findings and recommendations (Grinnell, Gabor and Unrau, 2019). The selection of research methods used in various types of projects is one of the most important aspects related to the preparation and implementation of evaluation processes. The starting point of these processes are evaluation planning and design. They are used to prepare the implementation of evaluation studies and to formulate, i.a., the purpose of the planned research, their subject matter, key questions, evaluation criteria and methods, recipients and form of final reports.

In the case of multifaceted and comprehensive project evaluation, the existing achievements in the field of research methodology for business and management studies, related to e.g. management and evaluation of strategic, development, non-commercial and public projects should be used. The cost-effectiveness of this type of projects is performed on the basis of an estimate of the costs incurred and the multifaceted benefits obtained. Acceptance for the implementation of a given project involves making decisions not only of a financial nature, but also strategic, environmental and social. There is still a significant gap in progress of project evaluation methodology regarding multidimensional methods and approaches that combine: qualitative and quantitative benefits, financial and non-financial means as well as different company levels (Glodzinski, 2018). Comprehensive understanding of the evaluation problem and taking into account many

aspects of the research process requires looking for new methods that can be an important complement to classical methods.

Due to the increasing diversity and complexity of the evaluated projects, evaluation studies should be based on interdisciplinary approaches. Solving such problems requires multifaceted assessment from the perspectives of several scientific disciplines. Development of the research methodology for social sciences and management as well as evaluation methodology can support each other. One of the possible directions of such development may be determined by modelling methodology based on intelligent symbolic and non-symbolic methods. This type of study uses the current state of knowledge in the fields of knowledge engineering, Artificial Intelligence (AI), project evaluation and management sciences. Symbolic and non-symbolic notions regard the different and specific nature of knowledge representation about the evaluated projects in knowledge-based systems (Grzeszczyk, 2018).

The main purpose of this paper is to provide discussion and empirical analysis of symbolic and non-symbolic project evaluation methods. The author shows the selected aspects of intelligent methods that can be used in project evaluation. After that, cases of non-symbolic methods and symbolic knowledge representation ones are presented and explained. Considerations are performed on the example of neural networks and rule based methods. Differences between symbolic and non-symbolic methods in the context of their use in evaluation studies are indicated.

## **2. Intelligent Evaluation Methods**

The implementation of evaluation processes is supported by methodological achievements resulting from the development of several fields and disciplines. Among them, accomplishments related to areas of social sciences, business and management studies, as well as advances in the fields of data science, artificial intelligence and computer science are important. Evaluation should be based on many fields of knowledge and interdisciplinary research. Due to the constant increase in volume, variety and velocity of data, there are real needs in methodological research related to the wide possibilities of new ICT technologies, learning intelligent systems and technologies based on artificial intelligence (Grzeszczyk, 2017;2018).

It is worth paying attention to new methods supporting research provided by project evaluation experts. Among them, there are methods based on AI that use symbolic and non-symbolic knowledge representation.

Comparing these two types in terms of their usefulness in evaluation studies conducted on the basis of management sciences is scientifically and methodologically interesting. Since both types of methods present knowledge regarding project characteristics and results from two different points of view, their combined usage might be fruitful both in business and management research. The obtained results might mutually complement, providing project researchers with in depth knowledge concerning evaluated projects.

Developing research related to intelligent evaluation methods makes it possible to move away from slavish binding as part of the methods available within social sciences. Transdisciplinary searches enable finding methods from other scientific disciplines, e.g. computer sciences attributed to technical sciences. In studies carried out as part of management sciences, for example, methods related to AI and related symbolic methods are increasingly sought for. Research on the use of some symbolic logic for knowledge visualization can, for instance, contribute to the development of communications between humans or machines (Velencei, 2017).

Similarly, when developing research related to the use of symbolic methods in project evaluation, they may seek to find new approaches to inter-agent communications.

Intelligent evaluation methods can use new technologies based on granular and soft computational approaches involving biologically inspired neural networks and genetic algorithms, as well as mathematically inspired fuzzy sets and rough sets. Research methods apply interdisciplinary study, artificial intelligence issues, machine learning, intelligent data analysis, data science, incomplete and uncertain information processing, programming in a fuzzy environment, problems of decision rules induction that are based on empirical and incomplete data, multicriteria sorting, ranking and classification of data. The following intelligent methods can be mentioned which are used in estimating of project success and evaluation: neural networks, fuzzy cognitive

maps, genetic algorithms, Bayesian Model, Support Vector Machine and others (Martinez and Fernández-Rodríguez, 2015).

Using the methods and intelligent systems one should take into account the achievements related to knowledge-based systems operating under conditions of uncertainty. Such evaluation systems may be based on empirically acquired data with significant variety and vagueness. Based on this data, one can discover new knowledge, save it using selected methods of its representation and manage it in project evaluation processes.

Project and portfolio evaluation as well as decision-making in various organizations are multifaceted knowledge-production processes. The use of visual and symbolic, intelligent, knowledge representation systems helps both exploration and exploitation of useful knowledge in uncertainty, turbulent and dynamic environment (Zanin and Bagnoli, 2015).

Such methods and systems are usually based on mathematical equations that are modelled on intelligent human behaviour, can be implemented in the form of computer programs and used in the processes of data collection and analysis provided during project evaluation. These solutions are of great importance for the development of research methodology for management studies, because the so-called soft research methodologies are in line with approaches characteristic for social sciences. In their case, the boundaries between the studied issues related to cognition and improvement are fuzzy and blurred, and the use of soft and fuzzy methodologies is in line with this. Soft research methodologies are an important alternative to hard, quantitative mathematical analyses based on the classical understanding of set theory. They enable the construction and improvement of general and formalized models, typical for management sciences, which take into account the problems of decision making in the conditions of risk, uncertainty, lack of competence or ignorance of decision-makers as well as inaccuracies and ambiguities of some concepts and dependencies.

### **3. Non-symbolic Methods Applications**

Non-symbolic methods are those that are biologically inspired, i.e. neural networks, genetic algorithms, evolution programming and ant colony. In their case, the representation of knowledge is not as clearly defined and readable as in symbolic methods.

Methods based on biologically inspired approaches make it possible to expand the areas of computer applications with problems for which there were no algorithms to solve. Computer algorithms that are developed by people are limited by their intellectual abilities. Using models based on non-symbolic, intelligent mathematical approaches, it is possible to find a reference point in organisms living in the natural environment and go beyond these limitations. Observations of this environment lead to conclusions about the superiority of natural life mechanisms, occurring in the natural environment, in comparison with computer algorithms invented by people. Prospects for the development of such methods result from the possibility of observing and discovering new phenomena occurring in the natural environment, as well as developing new methods resulting from these studies.

Among the intelligent non-symbolic methods, the most popular are neural networks, which require long-lasting learning processes, but it is possible to work relatively quickly at the stage of using already-learned networks. One of the major disadvantages of neural networks is the unreadable non-symbolic knowledge representation obtained as a result of learning processes. Neural networks are referred to as black-box methods, and output signals are obtained after the network has processed the signals supplied to the input of this box. An illegible to people form of knowledge results from the distributed and parallel processing of information by the neurons included in the network and the process of creating knowledge representation as a result of modifying connections (synapses) between individual neurons. Input information and methods of their processing are usually quantitative, which significantly limits the possibilities of applications in evaluation processes. It is difficult to find a clear justification for the obtained results.

Neural networks are the basis for proposing new methods of data analysis and can be an important complement, for example in relation to the classical regression analysis, which is often used to analyse data collected for the implementation of evaluation processes.

Such networks are learned and usually prepared for applications by using training data sets or looking for the most appropriate network responses obtained at the output, in response to input information. Networks learn from collections containing sets of input information and corresponding output information. The learned networks are informed about the belonging of evaluated projects to specific classes based on information from the training data sets.

Research (concerning the evaluation of hypothetical development projects) using non-symbolic methods is limited to performing regression analysis with the use of neural networks built from at least three layers: input, hidden and output. The number of neurons in the input layer results from the number of explanatory variables, and in the output layer there is one neuron corresponding to the social impact of an intervention.

The use of this type of model makes it possible e.g. to estimate the net effects of projects and to examine if there are measurable causal relationships between interventions and their outcomes as well as impacts. The calculations were performed using TIBCO Statistica version 13.3 software.

Multilayer Perceptron (MLP) and Radial Basis Function (RBF) were used in the calculations. It is assumed that the MLP consists of three layers. Regressive neural models were built using a selected type of network and having a specific architecture have undergone a learning process. The set of empirical data used in learning processes has been divided into training, validating as well as testing subsets, among which the training subset was the largest (70%). The study of the network susceptibility to generalizing knowledge was studied using a validating subset (15%). This enabled finding the right moment for interrupting the network learning process.

Data from the third testing subset (15%) were used for the final examination of the built-up regression models. Description of similar experiments are available in detail in the literature (Grzeszczyk, 2010).

Due to the fact that Statistica does not enable implementation of the deep learning concept, Neural Designer software for data mining has been used for more advanced calculations. This kind of software is a step forward in the development of data analysis methods for the needs of evaluation studies. To a greater extent than classical neural networks, e.g. it enables taking into account diverse opinions in complex community and relations between stakeholders. For example, there are significant challenges related to the implementation of participatory evaluation in development contexts and the collection of research-based knowledge (Chouinard and Cousins, 2013).

In order to meet such challenges, it is worth looking for new solutions based on developing technologies.

There is a lot to do in order to organize the theoretical foundations of deep learning processes. Unlike the previous, simple single neural networks, the importance of implementing unsupervised training with unlabelled data is increasing. Neural networks are often pretrained applying e.g. past experiences. Such data analysis methods will dynamically develop and require further study regarding the research methodologies for social sciences as well as business and management studies.

#### **4. Using Symbolic Methods**

In the case of methods based on the symbolic knowledge representation, it is possible to process qualitative data difficult or impossible to account for using quantitative methods. Such methods allow building evaluation systems characterized by the ability to find hidden dependences discovered in empirical data sets.

Symbolic methods ensure the possibility of constructing interdisciplinary systems that enable the processing and interpreting of various data, often available in subjective and imprecise forms, because they can come, for example, from people speaking in various ways. The data can also be stored and processed in the following forms: numeric, binary, logical or symbolic - for example, a record of an obscure statement in a specific language. The data can also be an uncoded sound and the image read from the microphone and camera.

In the case of symbolic approaches, knowledge is represented in the form of structures of certain symbols. They are compatible with people's way of thinking and can be interpreted very easily by them. Among the symbols used are, for example, decision rules, decision trees, logical formulas and others. The research presented in this part of the paper is based on decision rules.



Symbolic methods are the basis for constructing knowledge-based systems that have the ability to learn, adapt and self-improve thanks to acquired knowledge resulting from empirical data that are examples of learning. These examples may come, for instance, from experts who use them to describe a particular reality and their subjective attitude towards it. Thanks to this, it is possible to discover knowledge unavailable with other methods, which can be easily stored, modified and used to solve evaluation problems. In contrast to knowledge obtained by using non-symbolic methods, it is clear, understandable, and also easy to read, recognize and justify the obtained results. Symbolic methods allow to obtain a knowledge representation relatively easy to process in an automated way by using reasoning computer programs.

An important feature of the methods that enable obtaining a clear and symbolic representation of knowledge is qualitative form. This knowledge representation usually allows relatively easy implementation of an interactive dialogue with the user of this type of systems, as a result of which the system generates advice and suggestions, makes decisions on its own, etc. What is the most important, the advice and suggested decisions can be justified in a relatively simple way. Knowledge is stored in the knowledge base in the form of a symbolic, user-friendly system.

The initial representation of symbolic knowledge can be modified and updated as a result of learning processes of systems by using learning examples that are transformed into knowledge stored in the system.

These types of activities are referred to as supervised learning. They can be saved in decision tables and may refer to projects evaluated by experts. In the processes of such evaluations, in relation to the evaluated projects, experts often use imprecise and qualitative terms such as: good, poor, not great and similar.

The most important advantages of symbolic methods (in addition to the possibility of obtaining a uniform, clear representation of interdisciplinary knowledge regarding project evaluation) is also the relatively simple scalability of the system in case of expanding the knowledge base (by adding new rules). These methods also enable the processing of empirically obtained qualitative information, impossible or difficult to analyse with other methods. There is also a relative ease in the implementation of knowledge-based systems that allow simple entry of empirical data and practical use.

- Rule 1. (Innovativeness=4) => (Dec at most Poor); [18, 32.14%]
- Rule 2. (Innovativeness=5) => (Dec at most Poor); [10, 17.86%]
- Rule 3. (Innovativeness=3) => (Dec at most Poor); [8, 14.29%]
- Rule 4. (Innovativeness=2) => (Dec at most Poor); [5, 8.93%]
- Rule 5. (Innovativeness=6) & (Social=5) => (Dec at most Poor); [5, 8.93%]
- Rule 6. (Quality=2) => (Dec at most Poor); [2, 3.57%]
- Rule 7. (Quality=4) => (Dec at most Poor); [12, 21.43%]
- Rule 8. (Quality=9) & (Local=6) => (Dec at most Poor); [2, 3.57%]
- Rule 9. (Quality=6) & (Innovativeness=7) => (Dec at most Poor); [1, 1.79%]
- Rule 10. (Quality=5) => (Dec at most Poor); [15, 26.79%]
- Rule 11. (Quality=12) => (Dec at least Good); [15, 21.43%]
- Rule 12. (Quality=11) => (Dec at least Good); [15, 21.43%]
- Rule 13. (Quality=13) => (Dec at least Good); [8, 11.43%]
- Rule 14. (Quality=14) => (Dec at least Good); [6, 8.57%]
- Rule 15. (Quality=10) & (Innovativeness=8) => (Dec at least Good); [8, 11.43%]
- Rule 16. (Quality=9) & (Social=9) => (Dec at least Good); [4, 5.71%]
- Rule 17. (Quality=8) & (Innovativeness=8) => (Dec at least Good); [3, 4.29%]
- Rule 18. (Social=10) => (Dec at least Good); [4, 5.71%]
- Rule 19. (Quality=9) & (Innovativeness=6) => (Dec at least Good); [1, 1.43%]
- Rule 20. (Local=9) => (Dec at least Good); [4, 5.71%]
- Rule 21. (Local=5) & (Quality=10) => (Dec at least Good); [1, 1.43%]
- Rule 22. (Quality=6) & (Local=5) => (Dec at least Good); [1, 1.43%]
- Rule 23. (Quality=8) & (Innovativeness=6) => (Dec at least Good); [1, 1.43%]
- Rule 24. (Innovativeness=9) => (Dec at least Good); [13, 18.57%]
- Rule 25. (Quality=9) & (Social=7) => (Dec at least Good); [1, 1.43%]

**Figure 1:** Results of the calculations using the symbolic evaluation method (source: own study)

Empirical calculations were carried out for ex-ante evaluation of hypothetical development projects evaluated with the use of several criteria (innovativeness of proposed solutions, local community inclusion and participation, social potential increasing and quality of infrastructure supporting the local community). The empirical data set includes a total of 126 projects, among which 68 were positively evaluated and the others rated negatively.

4eMka2 software was used for these calculations regarding the solution of multicriteria sorting problems based on multicriteria decision analysis and Dominance-Based Rough Set Approach (Greco et al, 1999). Using Minimal Cover Algorithm (DomLEM), available in this software, a set of "if ... then..." rules was generated. The form of these rules is clear and allows easy use in practice. The set of all projects in the decision table is partitioned into two classes according to values of the decision attribute (good and poor). The results of the calculations are presented in figure 1. The values of support and relative strength [%] are given in square brackets. Projects support a decision rule if they match both condition and decision attributes occurring in this rule. A relative strength of a rule is its quality measure determined using the quotient: the number of examples that are covered by this rule to the number of all examples in the decision class.

The system based on the symbolic method allows processing incomplete and inconsistent data. One can enter question marks in places of missing data. The number of points determined by experts, which are part of the decision table, can be illogical and contain errors. The rule generation system is easy to use and can be applied even by evaluators who do not have IT education. All they need to do is enter a series of empirical examples that the system will process and, as a result, generate decision rules that are legible for people. In contrast to other types of multicriteria analyses methods, system users do not have to learn the mathematical basis of the models used in the calculations. Detailed information on this subject is available in the literature (Greco et al, 2004).

## **5. Differences between symbolic and non-symbolic methods**

Non-symbolic methods based on neural networks and other machine learning techniques are characterized by versatile application possibilities and are easy to use. Such methods are increasingly used in research related to project management and identification of key characteristics regarded to project management success (Locatelli et al, 2017). They are usually the basis for building evaluation models with significant possibilities of processing quantitative data. In the case of neural regression models, it is not necessary to precisely learn the relationship between input and output variables. However, there may be difficulties in finding the justification of the results obtained through clear dependencies and mathematical functions. The quality of these results largely depends on the experience of network designers, who in the process of matching the structures of neural networks usually base on their experience and intuition.

Generalization of experience gained in network learning processes is an ability characteristic of non-symbolic methods based on neural networks. It refers to the possibility of generating correct signals at the outputs of the network, even in cases where input information is not previously included in the training sets. Neural networks are also usually resistant to damage and errors occurring in training collections. Evaluators can get the correct result on their output even with incomplete and noisy data.

The disadvantages of non-symbolic neural methods include long-lasting learning processes. The use of learned networks for calculations is quite fast. The form of knowledge stored in neural networks and useful in the implementation of project evaluation processes is illegible to humans. This is due to the distributed and parallel processing of data in the network and weight of connections between neurons creating knowledge representation. The input information and methods of their processing are often quantitative, which significantly limits the possibilities of applications.

In the case of symbolic methods, the analysed data is usually of qualitative character. Intelligent systems built on such methods also have the ability to learn and adapt. The symbolic representation of knowledge is obtained, for instance, through the use of decision rules that can be generated on the basis of examples thanks to which the evaluation system could learn. Clear decision rules can be stored in knowledge databases. In contrast to non-symbolic methods, they have a declarative form that is understandable to people.

Non-symbolic methods are used rather for quantitative and symbolic methods for qualitative analyses. In the case of the former, it is easier to find analogies with classical methods of data analysis. Symbolic methods are developed more independently. Both types of methods require experience and intuition in their use. It is easier to build some mathematical relationships to evaluate the developed non-symbolic models due to their quantitative nature. Symbolic methods fit their use in evaluation processes in a more natural way and obtain clear results. They are non-parametric in nature and are easier to use in an intuitive and understandable analysis of qualitative data.

## **6. Conclusions**

Development of pluralistic research methodologies for business and management studies as well as methods that appear at the boundaries of several scientific disciplines is necessary in connection with the implementation of a growing number of evaluated projects whose significance, goals and effects increasingly go beyond rather easily measurable financial indicators. Currently, relatively few business activities and projects are of a short-term and purely commercial nature, and it is also possible to use a relatively small number of quantitative and simple criteria. Limiting yourself to the few simple and classic methods based on financial indicators is not advisable and it is necessary to carry out multifaceted research and take into account the diverse objectives of the project and the needs of stakeholders. It is usually necessary to conduct evaluation studies based on the adopted system of different criteria and requiring the use of many different methods. Only when using methodological pluralism, as well as intelligent symbolic and non-symbolic methods, one can better understand the evaluated projects, ensure their improvement and further development.

Among the intelligent evaluation methods that enable the processing of qualitative, imprecise, fuzzy and incomplete data, until recently, the most interesting methods have been based on human-readable objects with symbolic features. Due to this readability, they naturally match the applications in research related to social sciences, as well as build the foundations of research methodology for business and management studies. Such methods allow generating, saving and processing information and knowledge readable by, for example, evaluators and project stakeholders cooperating with them. These positive features of symbolic methods do not discredit non-symbolic methods. Both types of methods have significant development prospects and researchers as well as evaluators can expect an increasing interest in non-symbolic methods.

The importance of non-symbolic methods has been recently increasing due to the dynamic development of deep learning technologies, which are the basis for cognitive computing. Such technologies are based on cascade of multiple layers that is used for nonlinear processing. Non-numeric data can be entered on the input of intelligent systems. These systems enable processing of such data sets, describing their contents as well as speech recognition, classifying images and diagnosing qualitative objects. The functioning of these types of models sets the direction for the development of methods that in the future will work on the principles of ever-closer reasoning analogous to human thinking.

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# The Grounded Theory in 2.0 web Environment: Problems, Challenges and Needed Adjustments

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**Abstract:** The Grounded Theory is a methodology that proposes “a process of data analysis to generate substantive and formal theory” (Glaser and Strauss, 1967); This process is defined through the collection and accumulation of data, the codification and categorization of data, the saturation of the emerged categories and their relationship to each other, simultaneously. But the Grounded Theory as conceived by its authors, more than half a century ago, must be adapted and updated to the new 2.0 environments, to the new types of data and new data generation methods, to be useful in the generation of theory about social phenomena more complex and dynamic. Indeed, in today's society, called 2.0, where we are all transmitters and generators of data, the management of this data is much more complex than when the Grounded Theory was conceived: interviews are no longer useful in a controlled environment, but we speak of an infinite mass of data from a large number and a variety of sources of information. The Grounded Theory needs to be updated to know how to collect these almost infinite data (both qualitative and quantitative) to be able to compare them in a constant way, to enhance the sensitivity of the researcher so that he can identify the saturated categories and the subjects that the investigation evidences and, at the end, face investigations of contemporary social phenomena in the 2.0 era.

**Keywords:** Grounded Theory, 2.0 web, social phenomena, Information and Communication Technologies (ICT)

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## 1. Background

The Grounded Theory is a methodology that proposes “a process of data analysis to generate substantive and formal theory” (Glaser and Strauss, 1967); This process is defined through the collection and accumulation of data, the codification and categorization of data, the saturation of the emerged categories and their relationship to each other, simultaneously. But the Grounded Theory as conceived by its authors, more than half a century ago, must be adapted and updated to the new 2.0 environments, to the new types of data and new data generation methods, to be useful in the generation of theory about social phenomena more complex and dynamic.

In this paper, an in-depth analysis of the application of the Grounded Theory to new social phenomena in uncertain and changing contexts is carried out, focused on collecting a compendium of modifications and adaptations that I applied to carry out my doctoral research on social innovation, “La innovación social en España: ejes vertebradores desde la Teoría Fundamentada” (Herrero de Egaña, 2018); that is, they are based on a case study.

From that starting point, this paper represents an analysis of the research methodology and explores, explains and develops the adaptation of the Grounded Theory applied to a case study.

I didn't know the Grounded Theory until well advanced, therefore I spontaneously adapted the basic pillars of the Grounded Theory to the needs of study of a social phenomenon and therefore to the study of a dynamic changing reality, in constant evolution, and, above all, not institutionalized.

This fact has been decisive since it was *a posteriori* when I compared the methodology I had used with the great theoretical pillars of the Grounded Theory, and realized that I had introduced modifications, that would evolve this methodology and that would make it infinitely useful for extract the potential of other researches based on other social phenomena with the same characteristics.

For this purpose, I will briefly explain the Grounded Theory at a glance, the evolution of the Grounded Theory and how I applied it in the research mentioned above, to finish with a list of modifications that were implemented and can be useful to new researchers facing investigations on social phenomena.

## 2. The Grounded Theory at a glance

The sociologists Barney Glaser and Anselm Strauss (1967), in their work *The discovery of Grounded Theory: Strategies for qualitative research*, propose the basic principles of Grounded Theory as a method of approaching and analysing social reality, whose main objective is to generate theory from the data, resulting in a theory grounded in the data.

Hereafter I will make a brief reference to the principles of the Grounded Theory as it was enunciated; I will define its key concepts and how I applied them specifically in this research.

- **Construction of theory versus verification:** Unlike other methodologies used in social sciences, the Grounded Theory does not put emphasis on verifying pre-existing theories or demonstrating preconceived hypotheses, but on constructing and systematizing the theory that emerges from the analysis and the constant comparison of the data. “Our basic position is that generating grounded theory is a way of arriving at the theory suited to its supposed uses. We shall contrast this position with theory generated by logical deduction from a priori assumptions, that generating grounded theory is a way of arriving at the theory suited to its supposed uses” (Glaser and Strauss, 1967, p 2).
- **Generation of theory as a process:** The generation of a theory implies a research process. Likewise, the generation of a theory from the data means that most hypotheses and concepts come from the data themselves, systematically studied in the course of the research. “Our strategy of comparative analysis for generating theory puts a high emphasis on theory as process, that is, theory as an ever-developing entity, not as a perfected product” (Glaser and Strauss, 1967, p 32).
- **Importance of the data:** The theory must be anchored in the data, comes from the data and originates from them.
- **All data are susceptible to generate theory:** “Although the emphasis on qualitative data is strong in our book, most chapters also can be used by those who wish to generate theory with quantitative data, since the process of generating theory is independent of the kind of data used” (Glaser and Strauss, 1967, p 18).
- **The accumulation and analysis of the data must be done simultaneously:** “In the beginning, one’s hypotheses may seem unrelated, but as categories and properties emerge, develop in abstraction, and become related, their accumulating interrelations form an integrated central theoretical framework, the core of the emerging theory. The core becomes a theoretical guide to the further collection and analysis of data. [...] When generation of theory is the aim, however, one is constantly alert to emergent perspectives that will change and help develop his theory. These can easily occur even on the final day of study or when the manuscript is reviewed in page proof: so the published word is not the final one, but only a pause in the never-ending process of generating theory. When verification is the main aim, publication of the study tends to give readers the impression that this is the last word” (Glaser and Strauss, 1967, p 40).
- **The importance of comparative analysis:** “In discovering theory, one generates conceptual categories or their properties from evidence; then the evidence from which the category emerged is used to illustrate the concept. The evidence may not necessarily be accurate beyond a doubt (nor is it even in studies concerned only with accuracy), but the concept is undoubtedly a relevant theoretical abstraction about what is going on in the area studied. Furthermore, the concept itself will not change, while even the most accurate facts change. Concepts only have their meanings re-specified at times because other theoretical and research purposes have evolved” (Glaser and Strauss, 1967, p 21 f.).
- **Theoretical sampling:** “Theoretical sampling is the process of data collection for generating theory whereby the analyst jointly collects, codes, and analyses his data and decides what data to collect next and where to find them, in order to develop his theory as it emerges. This process of data collection is controlled by the emerging theory, whether substantive or formal” (Glaser and Strauss, 1967, p 45).

## 3. The Grounded Theory: decision among perspectives

The Grounded Theory, has undergone an important evolution since it was published for the first time a little over fifty years ago, in 1967.

Dr. Crucita Delgado in her work *La Teoría Fundamentada: decisión entre perspectivas* (2012, p 8) literally speaks of “different ways of doing Grounded Theory” and distinguishes differences between the Classical (or Glaser) Perspective, the Reformed (or Strauss and Corvin) Perspective and the Constructivist (or Charmaz)

Perspective, emphasizing that each one has ontological, epistemological and methodological implications, which we will briefly describe next.

It is indisputable that, since the emergence in 1967 of the Grounded Theory, times have changed, knowledge but, above all, how to approach phenomena in social sciences have progressed (Charmaz, 2006, Hallberg, 2006, Clarke, 2005). These new ways of conceiving of social reality and of relating to it have permeated the way in which the Grounded Theory has been conceived and analyzed. (Delgado, 2012, p 8; my translation)

The similarities between the three perspectives have to do with the methodological aspect, that is, with the main notions that lead to the elaboration of theory (theoretical sampling, conceptual categories, writing of memos, saturation of categories). However, the differences are presented in the rest of the aspects considered, such as the paradigmatic foundations, the theoretical guidelines and the steps to follow in the procedures.

**Table 1:** Differences between the tree perspectives of the Grounded Theory

SIMILARITIES BETWEEN PERSPECTIVES IN GROUNDED THEORY. THE CLASSICAL, REFORMULATED AND CONSTRUCTIVIST PERSPECTIVE
The theory generated must be anchored in the data.
Conceptual categories and not descriptions.
Categories related to each other.
Notion of constant comparison between the collection and the analysis of the data, both actions must be done simultaneously.
Theoretical sampling: more informants are added until the saturation of categories.
Need to achieve saturation of categories.
Minimum of previous knowledge.
The writing of memos allows the researcher to present ideas, assumptions, and propositions between codes and categories.
The memos facilitate the identification of areas of the phenomenon.
A substantive theory emerges from this process of data analysis.

(Source: the author, based on Delgado, 2012, p 35; my translation)

Dr. Delgado (2012, p 36) in relation to the basic differences that exist between the three perspectives mentioned, since all of them raise, tacitly or explicitly, substantial differences regarding the nature of reality, the researcher's relationship with his object of study, the interest of the researcher when initiating an investigation and the type of knowledge production that is intended.

The differences between the three perspectives can be organized around five big blocks: paradigmatic foundations, generated theories, the researcher's thought process, data analysis procedures, data collection techniques, differences in what is considered data and coding as ew can see in the table 2.

**Table 2:** Differences between the three perspectives of the Grounded Theory

Grounded Theory	Classical or Glaser Perspective	Reformed or Strauss and Corbin Perspective	Constructivist or Charmaz Perspective
<b>PARADIGMATIC FOUNDATIONS</b>			
Paradigmatic position	Post positivist	Naturalist, interpretative, phenomenology	Constructivism, interpretativism
Theoretical current	Critical realism	Pragmatism, symbolic interactionism	Social constructionism
Nature of reality	Objective reality external to the researcher	Subjective reality	Co-constructed reality
Relationship of the researcher and the object of study	Distant	Distant Interaction with reality, subjectivities	interrelated
Interest of the researcher	Discover and explain the behavior of social actors solving a certain issue	Understanding and interpretation of the reality in which it interacts	Co-construction of meanings about experienced events experienced by social actors
<b>GENERATED THEORY</b>			
Purpose of the theory	Explain and generalize behavior patterns	Interpret and understand meanings	Build meanings; understand the hidden meaning in the participants' purposes
Definition	Series of categories or abstract concepts related by propositions	Series of categories or abstract concepts related by propositions	Series of categories or abstract concepts related by propositions
Features	Discover and explain the behavior of social actors solving a certain question.	Integrated reference framework	Analysis as a social construction
		Values and relative truth	Interest in the how and in the why of social actions
		Social relations considered as a process and not only as products	Interpretation of the analyzed event
		It does not generalize localized theory	Dependence of the place, time, and the social actors that participated in its construction
<b>RESEARCHER'S APPROACH</b>			
Researcher's approach	Inductive	Inductive-Deductive	Inductive-Deductive
<b>DATA</b>			
Differences in data analysis procedures	Two stages: Open and Selective or Theoretical Coding	Two stages: Open and Selective or Theoretical Coding	Two stages: Open and Selective or Theoretical Coding
Differences in data collection techniques	Open interview Observation	In-depth interview Observation	In-depth interview Observation
Differences in what is considered data	Incident narrated by the participant Everything is data	Incident narrated by the participant	Built data: constructions
	The documentation is a type of data	Interpreted by the researcher	Narratives
<b>CODING</b>			
Differences in coding	Strictly adheres to explicit data	The explicit content and the latent content of the data are considered	The explicit content and the latent content of the data are considered

Source: the author, based on Delgado, 2012, p 39-55; my translation)

#### 4. Study case

As we have mentioned before, this paper is based on a study case, on how the methodology of the Grounded Theory was applied to a concrete investigation carried out between 2013 and 2018. This research was about a



dynamic social phenomenon, still not well defined, in the process of institutionalization, changing to a vertiginous: *social innovation in Spain*.

Once defined the key principles of the Grounded Theory and explained the differences between the different schools or developments of the same described by Delgado, I must mention two determining facts about why the Grounded Theory and how I have used it in this work is already, in itself, a vehicle for innovation.

In the first place, as I have already pointed out at the beginning of this paper, I must remember that I have developed and I have been advancing in this investigation without knowing the principles of the Grounded Theory nor the existence of it. This fact, for practical purposes, means that I have not made a decision *ex ante* between perspectives but, once started and very advanced research, I recognized, *ex post*, in which perspective the application of the Grounded Theory that already had, in large part, executed.

That is, I have not had the need to choose or justify the choice or decision between perspectives, but spontaneously and naturally and according to my profile as a researcher and the phenomena characteristics, I have implemented the original Grounded Theory version or, as we have been calling, classic.

Only at some point, I have added, in part, some of the contributions of the most advanced version of the Grounded Theory, that of Charmaz, a fact that comes to some extent marked by the second key factor, which I explain below.

Secondly, it is important to point out that the classic Grounded Theory originated in a different world: in 1967 the context, the problems and the means were totally different from the ones we have today and, in practice, in the data collection we spoke only from interviews and in very specific and localized contexts.

There is a fundamental fact in this substantial change of context, the irruption and normalization of the so-called "New Technologies" (now Information and Communication Technologies, ICT) because they are assumed as common vehicles of information and communication.

ICT has not only changed the context in which the day to day of all of us is developed, whatever our age and condition, but they have had a fundamental impact on this research, since they directly affect the forms of collection and accumulation of data, in the generation of the data themselves (both in quantity, quality and speed), consequently in the research design and even in the analysis methods.

This fact has an impact on almost all the pillars of the Grounded Theory, as we will see below.

In this work I have made a qualitative leap (worth the redundancy), applying the Grounded Theory in a context marked by the global, with data that tend to infinity and with a means of data collection that go far beyond the interviews, as I will explain in detail below.

#### 4.1 The data

In this context and for this kind o phenomena, quantity, quality, speed of data generation, tends to infinity. This has an impact on the sources of information.

As we can see in the figures shown below, the search for the words *innovación*, *innovation* and *social* add up to 4,880,990,000 entries in Google, while the syntagmas *innovación social* and *social innovation* total 7,130,000 entries. That is, we talk about an important, current issue, whose mass of data is almost impossible to access.

The same search in Google of the syntagmas *social innovation* in march 2019 is 867,000,000 entries, we don't need further explanation about the speed in generating new data.

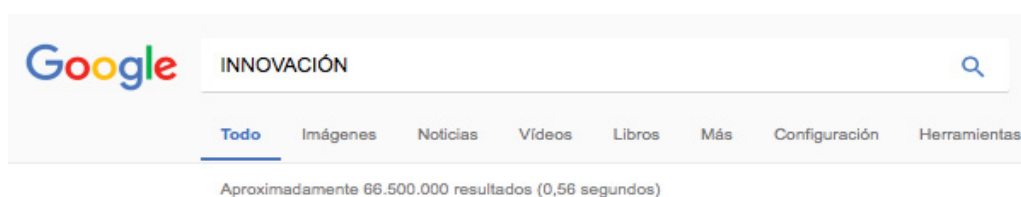


Figure 1: Screenshot of Google Entries with the search 'innovación'. (Retrieved: June, 24<sup>th</sup> 2017)

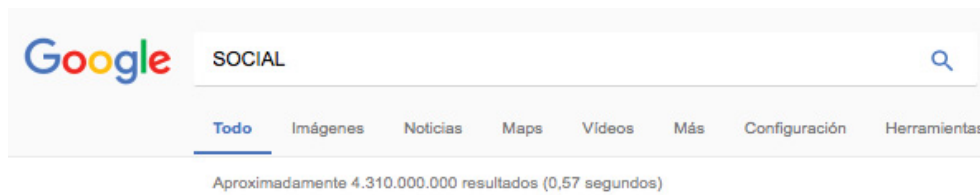


Figure 2: Screenshot of Google Entries with the search 'social'. (Retrieved: June, 24th 2017)



Figure 3: Screenshot of Google Entries with the search 'innovación social'. (Retrieved: June, 24th 2017)

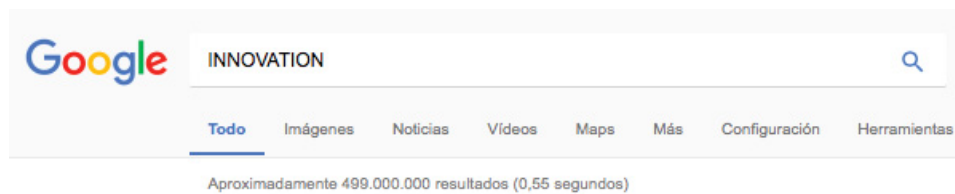


Figure 4: Screenshot of Google Entries with the search 'innovation'. (Retrieved: June, 24th 2017)

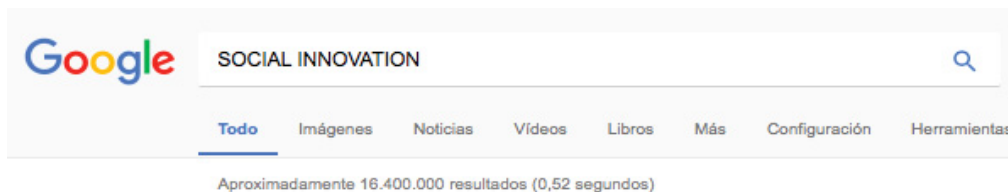


Figure 5: Screenshot of Google Entries with the search 'social innovation'. (Retrieved: June, 24<sup>th</sup> 2017)



Figure 6: Screenshot of Google Entries with the search 'social innovation'. (Retrieved: March, 9th 2019)

This figures, have a clear impact on the design of the research which has been adapted trying to respond to the needs of the research at all times. How can a researcher reach, collect all this huge amount of data?

The research design has be to adapted to manage this challenges. The best way to adapt the design is to identify the needs that have arisen throughout the investigation, how the different activities have responded to meet those needs, at what moments or phases these needs have arisen and therefore the corresponding activities and what results or deliveries have been produced.

As I have previously pointed out, the research process is marked by four activities, which are developed simultaneously, enriching and feeding each other, namely: the collection and accumulation of data, the codification, the categorization of data and the saturation of categories, the Analysis and elaboration of theory

(Delgado, 2012). Therefore, the research design should facilitate the correct and simultaneous realization of these activities.

Indeed, during the period between the years 2013-2018 (both inclusive) I have collected, analysed, labelled (codified and categorized) any information that contained the word *innovation* or the *social innovation* phrase in several languages (Spanish, English and Italian).

**Table 3:** Overview of the research design

NEED	ACTIVITY	PHASE	DELIVERY
To have as broad a vision as possible of the object of study, Social Innovation	Compilation		Field notebook
	reading	Accumulation of data	Database
	Analysis	+	Bibliography consulted
	1st Coding		
	Constant sampling	Coding	
	2nd Coding		
	Categorization	+	
	Deepening and focusing the vision regarding the emerged categories	Selection of the 50 cases	
Interview with the promoters of the 50 cases		Analysis	
Prepare Recommendations			
Identification of the contributions and validation of the same	Panels of sector experts: patents, entrepreneurship, CSR, ICT	Validation	Characterization of the Spanish Social Innovation: classification, relevant social challenges, triggers, good practices and frequent errors.
	Fast dates with social innovators (2018/2019)		

Source: Herrero de Egaña, 2018, p 116)

#### 4.2 The sources of information

The theoretical sampling, according to the authors of the Grounded Theory, is the process of data collection for the generation of the theory by means of which the researcher collects, codifies and analyzes their data and decides what data is collected below and where to find them, with In order to develop his theory, as it emerges (Glaser and Strauss, 1967, p 45).

As the authors of the methodology used in this research define, this data collection process is controlled by the emerging theory: the initial decisions for the theoretical collection of the data are based only on a general sociological perspective, not based on a framework theoretical preconceived.

One of my concerns, in the elaboration of this research, was to collect and rigorously examine the largest possible number of documentary sources of information referring to social innovation, which were being produced during the period of its realization; I considered, then, the publications, made anywhere in the world, that were written in Spanish and / or English, by authors who work in different areas of knowledge.

The sources of information used in this investigation can be grouped into three, namely:

- Field work
- Literature review
- Personal experience of the researcher

Each of these groups is broken down into other sources, and some interact with the others.

Both the personal experience of the researcher and the literature review have influenced the field work, and vice versa: for example, my personal experience, working more than twenty years in more than 27 countries, identifying needs and local partners, designing projects and comprehensive, human and sustainable development programs, seeking public and private financing for them, executing them, evaluating them and reporting on the results and impact achieved, has made my sensitivity to new ways of doing things and innovations more acute social. This knowledge and this sensitivity have served to start looking for information or to determine sources of information.

In the same way, the field work has conditioned and influenced the literature review because of the categories that have been emerging, topics have been marked to be strengthened from a theoretical point of view.

Its worthy to explain a bit further about the field work: I understand the field work as the set of actions I have taken to obtain direct data from the primary sources of information (people in the place and time in which events or events of interest for the investigation take place).

Faced with a reality that is constantly changing at the rate of the dizzying production of new knowledge, inherent in the nature of the object of study, I was concerned that my data was not sufficiently broad or that the coding and analysis of it were not enough. fast: that's why I established, almost from the beginning, a range of sources of information, which I expanded as the research hinted at elements of interest to deepen.

My field work, in addition to including instruments from this source of information such as personal and open interviews with social innovators, also includes all the information acquired on the network, on social networks, on the websites of different organizations and companies, in the online press, etc., since all these sources have been systematically accumulated, codified, categorized and analysed.

In the same way, the interviews with the promoters of 50 cases of social innovation, the work of individual return to them and, where appropriate, the second interview, the meeting with experts, have also contributed data that I have incorporated into the research.

Despite the enormous diversity of sources of information that have provided me with data in the field work carried out in the present investigation, these can be classified as follows:

1. Information proposed by the alarm system in Google and other search engines
2. Information from the monitoring and analysis of numerous accounts of different social networks
3. Relevant subscriptions to specialized newsletters
4. Information from reading newspapers, listening to radio programs, television, etc.
5. Information obtained in congresses and seminars attended on the subject during the period of the investigation.
6. Information from informal informants.
7. Specific searches made by this researcher, suggested by the previous sources
8. Interviews to social innovators of 50 cases
9. The activities related to the validation of the theoretical contributions

It can be worthy to give further information about three of this sources of information precisely because they are accessed through information and communication technologies:

1. Information proposed by the alarm system in Google and other search engines: The Google search engine and other search engines in the Net offer the possibility of planning specific searches by giving them some keywords through alerts.  
When starting this information search process, I established two alerts: one with *innovación* and another with *innovación social*, and their equivalents in English *innovation* and *social innovation*.

In addition, as the investigation has been progressing, I have added other alerts to detect information referring to specific aspects in which I wanted to deepen, such as: *innovación disruptiva* and its equivalent in English disruptive innovation, grassroot innovation (without equivalent in Spanish), *innovación frugal* and its equivalent in English frugal innovation, social innovation cases, social innovation examples, social and political innovation and social innovation Spain.

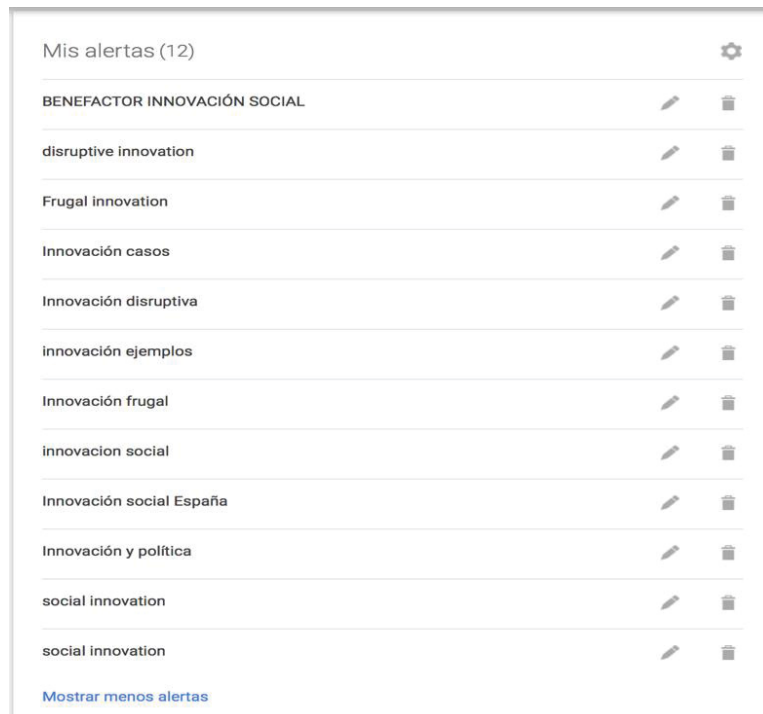


Figure 6: Screenshot of Google alerts on September 14<sup>th</sup> 2016.

2. Information from the monitoring and analysis of numerous accounts of different social networks.

It is fundamentally about Twitter, Facebook, YouTube and LinkedIn. The selection of these and not other social networks such as Pinterest, Instagram, Google+, among others, has been because they are the most used by social innovators.

Currently I follow more than 30 companies and I participate in more than 50 groups on LinkedIn, I follow more than 4,500 accounts on Twitter and I am on 19 lists and in more than 100 groups related to social innovation on this social network.



Figure 7: Screenshot of my Twitter account @BlancaHerrero1 on May, 25th, 2017

3. Information from the subscription and analysis of bulletins from different institutions and entities related to the field of social innovation.

As the number of entries in the field notebook increased, institutions, organizations, entities of different types, both public and private, local, national, international and multinational began to appear repeatedly, to which we could refer as social innovation actors.

Many of these actors offer the possibility of subscribing to a newsletter, bulletin, etc. Thus, I have been subscribing, these bulletins being new sources of information and enrichment of the field journal.

I ignored subscriptions to bulletins of social innovation cases, which respond to a more concrete follow-up of the cases in particular and less to a work of general impact on the investigation.

**Table 4:** Relevant subscriptions, in alphabetical order and characterizing them according to their predominant theme

Suscriptions	Subjet
- Actualidad del Observatorio de Economía Social	Social
- Ágora	Social
- Amnistía Internacional	Incidence
- Canal solidario	Social
- Change.org	Incidence
- Corresponsables	CSR and Social Innovation
- FSG Fundación Secretariado Gitano	Social
- Il Salone della CSR e IS	CSR and Social Innovation
- Innonatives	Social Innovation
- Instituto de Innovación Social ESADE	Social Innovation
- Instituto del Banco Europeo de Inversiones	Various
- Madrid Women Week Newsletter	Women
- Marca España	Various
- Mimuhu	Social
- Nesta Newsletter	Social Innovation
- Noticias Positivas	Social
- Observatorio Español de la Economía Social	Social
- Pacto Mundial España	Social
- RED CREATIVA	Social Innovation
- Ricken Patel - Avaaz	Incidence
- Social Innovation Exchange SIX	Social Innovation
- Sociedad de la Innovación	Social Innovation
- The Long + Short	Social Innovation
- The Stanford Social Innovation Review	Social Innovation
- Up social	Social
- Volunteermatch	Social (volunteer)
- Women's Forum Delegates	Women

(Source: Herrero de Egaña, 2018, p 134)

### 4.3 The corpus

Thus, the basic data collection tool in the days of Glaser and Strauss, the creators of the Grounded Theory, was the personal interview and, instead now, we can not only do virtual interviews but the primary data can be collected from endless sources and in real time.

In this work I have adapted Grounded Theory to a context marked by the global, with data that tend to infinity and with means of data collection that go far beyond interviews. For this reason, the sources of information have been numerous and diverse and the corpus of research is extensive, heterogeneous, representative and specialized.

As data compilation, codification and comparison were essential for my research, I must talk about the corpus of research in figures, as mentioned above: more than 3,000 entries, which have been codified, compared,

analysed and saturated throughout more than 5 years (2013-2018), and more than 500 social innovation examples and 50 case studies of Spanish social innovation.

It is evident that the figures multiply exponentially.

#### 4.4 Methods for data analysis

So far we have seen how the data is very new and the ways of collecting it are also new, due in part to the irruption of ICT; But how does this affect the data analysis, coding and saturation?

There are several factors that affect this part of the process of generating theory: First, the use of codes is something normalized in our era, the data transmitters themselves, label them, without ceasing, even in communication personal or private, not only in professional communication. Newspaper articles, tweets, blogs, posts, everything is labelled by the issuer.

This novel fact, in which *everything is codified*, and in which we refer to an almost infinite innateness of data, has an impact on almost all the pillars of the Grounded Theory: there is not a single central category but several, and each one it has numerous codes. This radically changes the coding process, as envisioned by its authors. (in addition, We must remember that there are numerous softwares to identify codes and categories, although in our case study they were not used).

Our case study consists of more than 3,000 entries, which have been coded, compared, analysed and saturated), generating 160 codes and 26 categories and 9 topics.

**Table 5:** Categories and research topics from coding

CODES	N	CATEGORIES	TOPICS
1-35	1 2 3 4	Type of entry Content Year Place	Topic I: Data or entries analyzed
36-40	5	What	Topic II: Agenda
41-57	6 7 8	Essential elements Other elements Adjacent concepts or phenomena	Theme III: Conceptualization and characterization of social innovation
58-74	9 10 11 12	Subject Ambit Mode Features	Topic IV: Innovative elements
75-86	13 14	Legal form Non-legal form	Topic V: Legal and non-legal form of social innovation
87-104	15 16	Beneficiaries Actors	Topic VI: Social Innovation Interest Groups
105-141	17	Inclusion	Topic VII: Relevant Social Challenges of Social Innovation (RSR)
	18	Sustainability	
	19	Participation	
	20	Development and Human Rights	
	21	Instrumental	
142-158	22	Others	Topic VIII: Case analysis
	23	Detonating	
	24 25	Frequent errors Good practices	
159	26	Other issues related to social innovation	Topic IX: Dialectic of social innovation
160 onwards	27	Concepts	

(Source: Herrero de Egaña, 2018, p 226)

The connection between the different topics gave rise to nine fundamental contributions to learn about social innovation and social innovation in Spain.

Through the adapted and modified application of the Grounded Theory, important theoretical advances were achieved, anchored in the data: First, a definition of social innovation, a term that, as the data showed, is a concept under construction, with no definition unique and accepted by all; In addition, the social innovation of other neighboring phenomena was delimited, such as social entrepreneurship, Corporate Social Responsibility (CSR), patents or inventions and Information and Communication Technologies (ICT). Likewise, it was the interest groups of social innovation, the innovative elements and a pioneering classification of social innovation based on the dominant innovative element.

In relation to social innovation in Spain, the research helped to describe it, to locate it in space and time, identifying the tension between the legal and non-legal form of it, highlighting and describing the Relevant Social Challenges and explaining the triggers, the weaknesses and strengths of the same in a way that can be understood and therefore promote the phenomenon.

## **5. Conclusion**

The methodology of the Grounded Theory is alive and adapts easily to the new times, in which the data are produced in huge quantities and at great speed, being very useful, I would even say, necessary for the study of contemporary social phenomena.

The irruption of Information and Communication Technologies completely changes the context of research: in the same way that it multiplies the data to analyze, the sources of information and therefore the work of analysis, codification and constant comparison, also facilitates the coding and offers programs and tools so that the collection of data is broader t quick and for the analysis of the data themselves.

The adaptation of the postulates of the Grounded Theory to this new context facilitates the researcher to deepen the full potential of his research and the phenomenon under study.

For researchers willing to use this Grounded Theory approach, these are some practical guidelines:

- Data collection: The fact that there is an endless production of data of all kinds has to be seen as an opportunity not as a limitation. Alarm systems, as well as online searches with certain keywords can be a huge help to collect and to encode data.
- Coding: The fact that in this 2.0 era anyone can be a transmitter / producer of data and that these data are generally encoded, spontaneously by their authors can serve as a first coding round.
- Data comparison: the fact that today they are produced and therefore can collect and encode great amount of data of all kinds is not against the quality of them; on the contrary, the data sometimes reaches more elaborate, there are technical means (software) to help compare them and yet the sensitivity and intuition of the investor, acquires greater prominence and differential value.

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# Methodology Toolkit for Management Educators

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**Abstract:** Many authors agree that our understanding of how students learn using business simulations is relatively limited. The quest to understand student learning, specifically in the African context, becomes more important in order to leverage the benefits that simulations hold for developing the skills needed by graduates in the fourth industrial revolution. This raised an interesting question regarding the best methodologies within the educator's toolkit to employ in studying the learning process and impact of simulation based courses. This conceptual paper outlines the methodological approaches used in a carefully selected case study, being a longitudinal, dual institution research project which incorporated a unique combination of qualitative and quantitative methods. The qualitative methodological blend of the research project included participative action research, reflective journals of educators, weekly student reflections and focus groups. Student performance during the simulation, marks, survey data and assurance of learning reports provide a quantitative view. The case study further highlights specific ethical challenges that were addressed; firstly, the researchers kept track of student responses whilst observing the principles of informed consent, over multiple data points. Secondly, the authors endeavoured not to burden respondents with excessive requirements but rather worked on ensuring synergy between data collected and learning objectives. This paper proposes a conceptual model outlining a methodological mix to research student learning in order to address one of the most common critiques levelled at management education literature, being the lack of long-term, in-depth and rigorous study of student learning.

**Keywords:** management education, research methodology, computer-based simulation, reflection, participatory action research, mixed methods

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## 1. Introduction

'This works', 'it's the best way!', 'they understand', 'they engaged with the subject', these are just some of the statements you might hear from academics or service providers of the tools and texts that are employed in the course of teaching. While there are research findings pointing to the benefits derived from including computer-based simulations in management education, there is significantly less clarity about the aspects that influence successful implementation (Adobor & Daneshfor, 2006). There is no shortage of lofty claims in the pursuit of education and particularly related to the trends brought about by technology. The researchers have not been exempt from intuitively claiming, for example, that simulations are well placed to develop critical thinking and highly suitable as a capstone unit in delivering learning outcomes. While these claims can be supported by citing peer reviewed articles, truthfully the findings did not originate from or relate to the emerging African context. Born from the twofold desire to be effective educators and to avoid unsubstantiated claims of teaching efficacy the research project, "increasing the impact of simulation based courses" originated. Serendipitously, the researchers were exposed to the work, amongst others, of Carr and Kemmis (1986, p.2) which puts forth "the claim that professional development of teachers requires that they adopt a research stance towards their educational practice". Developing a research stance provided the impetus for undertaking the said research project and crafting an appropriate methodological approach. This paper's main contribution doesn't lie in expounding on the individual methodologies utilised in the research project, but rather in providing educators with a case for a conceptual model of a methodological mix that allows robust research of student learning and engagement.

## 2. Background

The growing popularity of computer based simulations drives the research agenda to gain insight into the elements and conditions that promote their effectiveness (Adobor & Daneshfor, 2006). But, what does effectiveness mean, what should be measured and how? McKenney and Reeves (2018) point out that in the last few decades, across the world, policies about educational research have alternated between focusing on rigour above all else, or emphasising impact. They conclude that the qualities of rigour and impact should not be treated as mutually exclusive research agendas, rather synergy should be sought. While this insight is both useful and daunting to educational researchers, Anderson and Lawton (2009) provide encouragement by reaffirming that it is incredibly unlikely that one study or article will definitively address the value and efficacy

of a given pedagogy. Rather, to achieve clarity and insight, research itself must be regarded as an iterative process requiring countless small but purposeful steps in the right direction. Interestingly, determining the 'right direction' for research and ensuring sufficient interest by scholars in that direction is easier said than done. Arbaugh and Hwang (2015) point out that while trends continue to abound and garner interest, more established areas, such as experiential learning have not benefitted fully from renewed interest and that multi and transdisciplinary research is suffering due to a lack of cross disciplinary research dialogue. Interestingly, the business disciplines benefiting from the surge in articles and citations is rather uneven with a focus on entrepreneurship education, online education or critique of business schools (Arbaugh & Hwang, 2015). It is precisely out of the critique that business schools receive, that a cry for the reinvention of management education emerges (Steyaert, Beyes & Parker, 2016).

The right method to use in a research project should always be dictated by the research question. Borrowing from the field of architecture where form follows function, it can be said that in research, 'methodology follows question'. In pursuit of the 'right direction' and reimagining management education the researchers started with multiple questions, what is the ideal group size, should lecturers allocate roles to students, are students deeply engaging in the strategic planning process when they make decisions in the simulation, are they developing leadership skills in their group interactions? These questions were not all entirely synergistic but research questions could be grouped according to thematic categories such as 'team work', 'leadership development', 'ethical decision making' and 'strategic planning and decision making', to name a few. In addressing the variety of research questions that emerged the researchers agreed that the overarching primary objective of the research was about measurably increasing the impact of the course, both in terms of teaching strategies employed and in terms of learning outcomes achieved by students, without burdening students with additional work. The variety of questions also necessitated the collection of different data points, and therefore different data analysis methods were employed, each time ensuring that the right lens was utilised for the right question and that appropriate rigour was applied to the research process and management of data. Table one outlines the conceptual research road map put forward by this case to address some of the critique levelled against management education whilst continuing with the architecture metaphor.

### **3. Review of the literature**

#### **3.1 The value of the right method**

As a point of departure, it is important to consider the nature and essence of the two broad methodological approaches, qualitative and quantitative research, each of which represents a variety of research methods.

Qualitative methods have the distinct advantage of enabling the researcher to focus on the human experience as a whole and to delve into the meanings that individuals ascribe to their experiences (Mason, 2006; MacDonald, 2012). Because of this focus on understanding social realities, qualitative methods generate words as data for analysis (McCusker & Gunaydin, 2015). Cameron and Molina-Azorin (2011) affirm that qualitative research approaches the questions at hand with an analytic focus on words, developing theory, based on the insights gained from observation. This affords researchers the opportunity to do in-depth studies focusing on the complexities of business related phenomena (Hair & Sarstedt, 2014) and on a theoretical position instead of on specific research questions (Choy, 2014).

Quantitative methods aim to measure factors that are quantifiable, such as the size or frequency of a factor, for example, the percentage of people with a certain disease (Lune & Berg, 2016). Thus numbers are generated as data for analysis and the methods involved in qualitative research can seem imprecise from this vantage point (McCusker & Gunaydin, 2015). Quantitative research begins with researchers selecting a topic from a certain area of study or personal interest. Qualitative research, however, begins more reflexively with the researcher conducting a self-assessment and reflecting on their insights (Choy, 2014). It is therefore fitting in the context of the research project under discussion that both quantitative and qualitative research are employed, for different but complementary purposes, in the form of a case study, under the banner of Participatory Action Research (PAR). In this endeavour, researchers have to ensure that the ontological and epistemological stances held by both the quantitative and qualitative approaches are respected (Scoles, Huxham & McArthur, 2014).

**Table 1:** Research process for a longitudinal educational project

Step	Activity	Reason
Lay the foundation	Definition of research question(s) Possibly a priori constructs Ethical considerations of project	Provides focus Ensure theoretical grounding of key constructs Address all relevant ethical considerations
Build up the window frames: Framing	Multiple data collection methods – select appropriate combination  Qualitative and quantitative data combined  Flexible and opportunistic data collection methods  Multiple investigators (educators, students, different courses and/or universities)	Strengthens grounding of theory by triangulation of evidence  Synergistic view of evidence  Allows investigators to take advantage of emergent themes and unique project features  Fosters divergent perspectives and strengthens grounding
Building walls and roof: Taking shape	Cluster data sets into broad categories outlined by research questions  Select appropriate data analysis methods  Analyse within data clusters  Cross-cluster pattern search using divergent techniques  Combine different data	Provide researchers with workable data sets  Clear link between the type of data and the data analysis chosen  Gains familiarity with data and preliminary theory generation  Forces investigators to look beyond initial techniques impressions and see evidence through multiple lenses
Adding interior fixtures	Iterative tabulation of evidence for each construct (shaping hypothesis)  Search evidence for "why" behind relationships	Sharpens construct definition, validity, and construct measurability  Builds Internal validity
Finishing touches	Comparison with conflicting literature  Comparison with similar literature  Theoretical saturation when possible	Builds internal validity, raises theoretical level, and sharpens construct definitions Sharpens generalizability, improves construct definition, and raises theoretical level Ends process when marginal Improvement becomes small

Source: Adaptation of [Eisenhardt \(1989\)](#)'s theory building process

### 3.2 The case study approach

Case studies have been recognised as more than just a research method and are acknowledged as a research design in their own right (Phelan, 2011). As a research strategy the case study approach enables a focus on the

prevailing dynamics in a given setting (Eisenhardt, 1989). Case studies can support both the qualitative and quantitative research traditions and are complementary to other research designs (Creswell, 2009). Case studies are particularly appropriate for in depth reviews of unclear phenomena without sacrificing either the holistic real life view or the particularities of the context in question (Yin, 2009).

### **3.3 Participatory Action Research as a method**

Action research involves systematically collecting and analysing data with the overarching goal of effecting change by taking action (Gillis & Jackson, 2002). As a subset of action research, PAR, in essence, aims to effect social change by means of specific actions (McNiff & Whitehead, 2006). An important criterion for successful PAR is both the action researcher and community members who want to see an improvement in their situation. This methodology is well suited to research in education, adult education, community development and organisational development (Young, 2006). PAR allows the qualitative features of participants' views, patterns and even feelings to be revealed without the researcher manipulating or controlling (Leininger, 1985; MacDonald, 2012). Importantly, knowledge creation is regarded as an active process (McNiff & Whitehead, 2006).

The work of Kurt Lewin (1944) is widely acknowledged as the origin of PAR as he is considered the father of action research (Gillis & Jackson, 2002). At its core PAR is founded on Lewin's life experiences and the philosophy that people would be more motivated to accomplish their work if they felt involved and valued in decision making processes (McNiff & Whitehead, 2006). Another key contribution by Lewin in the process of popularising action research was the presentation of this methodology as an approach to not only study a social system but also work to simultaneously effect changes (Gillis & Jackson, 2002). Lewin's original advice to researchers about how to structure and report on their research is a cycle that is still in use today, moving from observing, reflecting, acting and evaluation to modifying (McNiff & Whitehead, 2006). Schön (1995) posits that new paradigms of scholarship, which works to include research, teaching, application and integration should be firmly based on reflection. With this original focus on reflection well and truly intact it should not be a surprise that the roots of PAR also wind their way to Paulo Freire, who was a believer in the value of critical reflection (as part of a wider process) for personal and social change (Maguire, 1987). Freire also espoused the empowerment possibilities of PAR by emphasizing the importance of critical consciousness on social change (Freire, 1970).

Promisingly, PAR provides an alternative to traditional social research by changing the narrative from the linear 'cause and effect' to a framework involving participation and considering the context of participants' lives (Kelly, 2005; Young, 2006). One of the criticisms from a more traditional perspectives is that PAR is a 'soft' and open-ended research design (Young, 2006). The open ended nature of this approach can, however, be tremendously beneficial for complex contextual problems. In light of this, PAR as a method acknowledges the need for participants to become co-creators, forming part of the research process, from design to dissemination (Vollman, Anderson & McFarlane, 2004). The purpose of the research agenda then is to enable capacity development, empowerment, social justice and of course, participation instead of passivity (Vollman *et al.*, 2004).

PAR entails a cyclical process that iterates between research and fact finding, taking action and reflecting on the process and distilling insights before further research takes place (Marshall & Rossman, 2006). It also requires individuals to be self-reflective with the ultimate goal of improving the situation (Koch, Selim & Kralik, 2006). Interestingly, Selenger (1997) highlighted that an important component of PAR is that it has the ability to make participants aware of the resources under their control that they can utilise for self-reliant development. Therefore, PAR is very well aligned with the goal of educators to encourage self-directed learning in their students.

### **3.4 The value of employing a Methodological mix in the context of PAR**

Scoles *et al.* (2014) agree that mixed methods are particularly appropriate to address problems in complex environments, such as presented in the field of education. Ideally, mixed methods are valuable when quantitative and qualitative data can be analysed together and the insights from one method can complement the use of the other method (Scoles *et al.*, 2014). Interestingly, PAR is very flexible when it comes to methods that can be employed to collect data. The reason for this flexibility is that in each context the researcher and participants collaboratively define the research problem and then consequently select the appropriate methods to collect the required data (McNiff & Whitehead, 2006). Streubert and Carpenter (1995) provide

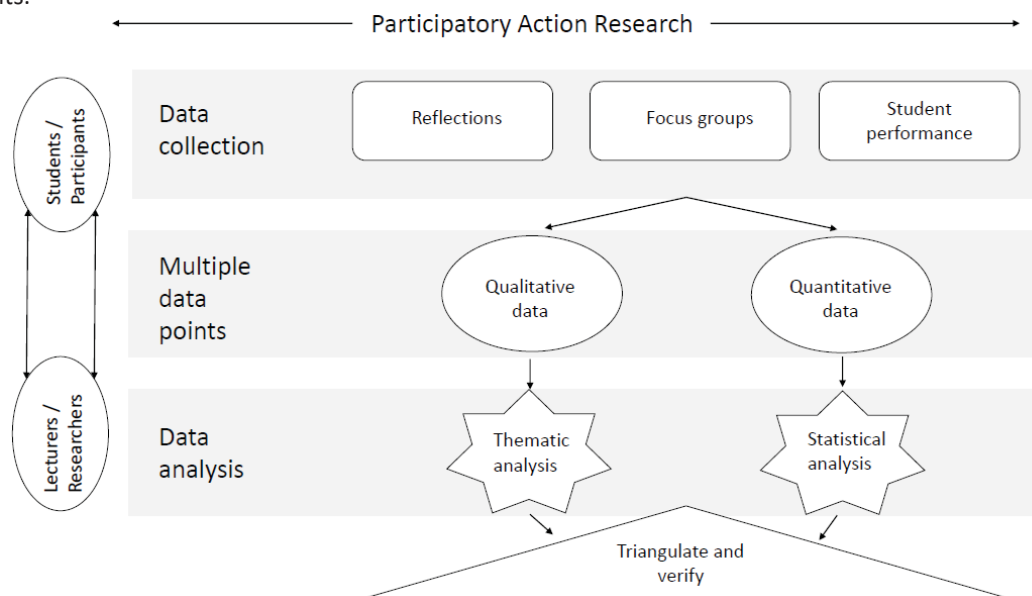
very good advice by saying that at least three different methods should be employed to transcend the limitations that each individual method presents. Qualitative methods, for example, enable the researcher and participants to share information, providing both parties with the opportunity to share and learn and this is particularly the case with PAR. Additionally, quantitative methods provide the specific opportunity to measure performance and triangulate research findings. Some of the methodologies utilised in this research project are:

- *Focus groups*, which are a type of small group interview benefiting from the interactions between research participants, who have characteristics relevant to the study in common, for data collection (Marshall & Rossman, 2006).
- *Participant observation* which involves the systematic noting and recording of behaviours, events and objects which the researcher obtains by having access to research subjects in the context of a social setting, providing a rich source of data (Marshall & Rossman, 2006).
- *Validated measurement instruments* conducted via surveys
- *Student and lecturer reflections*
- *Student performance during the simulation*, marks, and assurance of learning reports provide a quantitative view

#### 4. The methodological mix utilised in the Simulation research project

##### 4.1 Method of data collection and instruments

Data has been collected from two South African universities from 2015 – 2018 and should continue until 2020. Both courses centre on a business simulation with similar learning outcomes. The one course serves as a capstone module for a Bachelor of Business Science degree and the other is an honours unit within a Strategic Management degree. The project uses a systematic Participatory Action Research approach as the researchers and students are participating in the research project collectively engaging in finding solutions to increase student learning. The researchers are also responsible for lecturing the units and Figure 1 provides an overview of the research process. This means that the researchers are also moving through the participating, acting and research phases. Students are seen as part of the research team as their actions and reflection enable a collaborative process. Therefore the courses are continuously improved as the researchers reflect and learn during and from the research process. This is important as the central goal of any educational research should be to improve learning. The lessons learnt by the researchers lead to actions to benefit both current and future students.



**Figure 1:** Conceptual model of the methodological mix utilised in the simulation research project

Source: Authors own

A key research tool used in the project is reflection. Both the researchers' reflection, as well as students' reflection, are used as data collection methods as can be seen in Figure 1. The researchers write a reflective

journal and make notes of their experiences and observations during the course of the semester. Students are expected to reflect every week as part of the experiential learning cycle (Kolb, 1993, 2007). In this way, the reflection assists student learning but also serves as a data collection method, complying with one of the project goals, namely not to overwhelm or burden students with extra school work. Reflection is prompted by carefully selected prompting questions based on the learning experiences within the curriculum in the specific week. A combination of open-ended questions (for example: *What do you hope to learn from participating in the simulation?*) and short answer questions (for example: *Which option best describes your team's success at forecasting, in terms of the gap between your decisions, forecasted results and actual results*) are utilised. Validated measurement instruments are also included to measure constructs such as group efficacy and group conflict resolution using likert scales. While the measurement scales were not developed in South Africa, the researchers reviewed the language of each item within the scale to account for any contextual differences. Google forms are used so that students can submit their reflections online at their convenience during the week. As lessons are learnt during the PAR process, the researchers have adapted some questions and added others where appropriate.

Peer evaluations of team members are done twice during the semester. This data is collected via the simulation platform and provides quantitative data. Focus groups are also used at the end of the semester. Students are prompted to discuss issues such as the most important lessons learnt, what they would change about the course in the future, etc. The focus groups are recorded and transcribed in order to be analysed. Student performance during the semester is another important source of data which is used to develop a holistic view of student learning. Student performance data is collected using their simulation results, marks and assurance of learning reports. Performance during the simulation is measured using a balance score card containing the four standard categories namely 'financial', 'internal business processes', 'learning and growth', and finally 'customer'. The assignments completed for which marks were captured include reflections and peer evaluation-, simulation-, business report-, presentation- and exam marks. The assurance of learning report includes marks for analytical skills, critical thinking skills and functional knowledge skills, providing additional quantitative data. Demographic information, such as gender, age and university, of the participants are collected using Google Forms.

#### **4.2 Analysis of data**

Thematic analysis is used to extract themes from the qualitative data as indicated in Figure 1. Thematic analysis consists of six steps namely; (1) Familiarisation with the data which requires the researcher to read and re-read data to become intimately familiar with it, (2) Coding which requires the researcher to develop labels for important elements of the data which are relevant to the research question in both a semantic and conceptual way, (3) Searching for themes which groups various labels or codes under general themes, (4) Reviewing themes which includes inspection of themes to ensure that they are relevant and relate to the topic of study, (5) Defining and naming themes which requires the researcher to write a detailed analysis of each theme and (6) Writing up which involves connecting all themes and data extracts to each other in a coherent and understandable manner in relation to existing data (Clarke & Braun, 2013). The quantitative data is analysed using SPSS in order to arrange and summarise the data based on descriptive measures (Selvanathan, Selvanathan & Keller, 2011).

A key characteristic of the methodological approach used in this research project, which also mirrors the traits of PAR is its iterative nature. Any insights gleaned by the researchers are undergoing a two tier process of member checking with students to ensure clarity and accuracy in the discussion and insight and then also peer debriefing between the researchers. Peer debriefing involves collaboration between researchers in pursuit of ensuring that valid information is collected. While it is ideal in debriefing for the said colleague to be impartial and have some distance from the study, the researchers find that working for different institutions and with different cohorts of students provides perspective. Once insight has been clarified and distilled not only does it permit for the triangulation and confirmation of findings but it also feeds back into data collection process as questions and processes are updated and tweaked.

#### **4.3 Data management choices**

As the number of respondents increased year by year and the demands of ensuring rigour and consistency increased with each subsequent semester the researchers found themselves relying more and more on technology as an organisational tool. Google forms were used to capture student reflections and responses to validated measurement instruments. Google drive was used as cloud based storage to centralise and organise

the records pertaining to informed consent, student performance, voice recordings of focus groups and storage of transcripts. A lesson learnt was that learning management systems (LMS) only store data for the duration of a course and if not saved timeously data can be lost. The challenge with downloading data from LMS's at two different institutions also meant that formatting and creating synchronicity became both a timeous and tedious exercise. Using Google forms ensures uniformity between campuses and across years.

Deciding how to organise the captured data also presented interesting challenges, particularly for qualitative components of the project where the boundaries between research themes are not so clear cut. Word documents were created for analysis in Atlas.ti and organised according to questions asked and answered, campus and year of the responding cohort, with care to ensure that relevant answers (even to seemingly unrelated reflection questions) were included in the appropriate thematic grouping at face value.

## **5. Ethical considerations**

Connelly (2014) describes ethics as a critical consideration when conducting research. In order to ensure that the research project complied with all the necessary ethical processes, approval was obtained from both participating universities' Human Research Ethics Committees before the study started. The researchers do a short presentation explaining the purpose of the research project, an introduction to participatory action research, what voluntary participation means and the time commitment involved in partaking in the study. The explanatory letters and consent forms are then distributed and collected by a third party while the researchers are not present, providing objectivity. Every effort was taken to ensure that the data collection process was conducted in accordance with ethical standards set forward by the ethics committees before the data collection process began participants were informed of the following:

- The proposed time commitment and implications of participation.
- That participation is voluntary and that participants may withdraw or refuse to answer any question at any time.
- Assurance that all information provided will be treated with confidentiality.
- That participants have access to request a copy of the final research results.

Ethical principles that relate specifically to PAR that were adhered to include that the all participants must be afforded the opportunity to influence the study, those who choose not to participate must be respected and finally, it is the researchers' responsibility to maintain confidentiality throughout the research process (O' Brien, 2001).

## **6. Validity, reliability and trustworthiness**

Achieving rigour, minimising bias and ensuring the credibility of findings is the goal of the research project in question (Noble & Smith, 2015). While different terminology is used to describe the ideas of validity and reliability in qualitative research the objective remains the same. In pursuit of trustworthiness in qualitative research, credibility, transferability, confirmability and dependability are the criteria that have to be applied (Anney, 2014). Strategies that were utilised during the research project were informed by Noble and Smith (2015):

1. Acknowledge and work to minimise personal biases which could influence findings
2. Ongoing critical reflection of methods employed to ensure appropriate depth and relevance of data collection and analysis
3. Meticulous record keeping, ensuring interpretations of data are consistent and transparent
4. Seeking out both similarities and differences across responses to ensure different perspectives are represented
5. Inclusion of rich and thick verbatim descriptions by participants to support findings
6. Systematic and clear thought processes during data analysis and interpretations
7. Engaging with other researchers to reduce bias
8. Respondent validation- which aligns well with the principles of PAR
9. Data triangulation-different methods and perspectives work to ensure comprehensive findings

The considerations of validity, reliability and trustworthiness must be incorporated during research design and carried through during implementation.

## **7. Implications for practice**

The researchers have learnt a great many lessons throughout the research project, from an operational point of view a valuable lesson was to, manage, store and file the data clearly and consistently! Akin to undertaking a building project, each phase has brought its own insights and challenges, such as deciding which technology to employ to collect reflections or store data. Capturing and cleaning the data for analysis has also proven to be a cumbersome task as managing multi-campus, multi-year and multi-questionnaire data requires significant administration.

Additionally, the researchers can affirm that the richness, quantity and quality of data collected because of the methodological mix employed are beneficial as a source of reflexivity and an avenue for publication and can similarly be useful to other management educators.

## **8. Conclusion**

The researchers embarked on a research project with both the scale and scope to collect large amounts of data and address multiple research questions and areas of investigation. The overarching methodological approach used in this conceptual case study was Participatory Action Research which presented the flexibility for researchers to include methodological tools as necessitated by research questions such as focus groups, reflective journals, surveys containing validated measurement instruments and data tracking student performance in the simulation. The collection and analysis of multiple data point facilitated triangulation but also informed subsequent teaching and research practices as the research is longitudinal in nature. Adhering to ethical principles and seeking to collaborate with students as outlined by the PAR methodology presented challenges and opportunities that have enriched the project findings and insights gained by the lecturers.

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# The Role of Augmented Reality Games in Promoting to Millennials

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**Abstract:** Augmented Reality's (AR) development within the business context has attracted both practitioner and academic interest, especially from marketing academics. Using an Augmented Reality game (ARG) employed by a CBD shopping centre in Melbourne as part of a promotional campaign in 2018, this study explores the implications of ARG on millennials' consumer behaviour. The qualitative study involved an ethnographic approach with multiple phases of data collection. After analysing user-generated content on social media pertaining to a shopping centre's marketing campaign involving an AR game (netnography), the researchers participated with millennials involved in the gameplay whilst they were gaming. By engaging in gameplay with the players and collecting the first-hand experience of the players through social media posts, observations, and semi-structured interviews at various points, the researchers remained true to the inductive and discovery-based processes of ethnographic research on millennial ARG gamers. Although most of the respondents opined positively on the novel promotional campaign involving an Augmented Reality Game, the impact of such AR campaigns was questioned by some consumers; especially the players who had prior knowledge of the shopping centre and its retail outlets. Using AR games resulted in an improvement in exposure and foot traffic - which are key benefits to attracting younger consumers to bricks and mortar shopping centres. Currently, traditional bricks and mortar shopping centres might not be positively perceived by millennials since there are a plethora of other retail platforms. However, with innovative promotional methods using AR, they could be coaxed into traditional shopping mediums. From an academic perspective, the negative impact of flow is underexplored in AR and the ethnographic research methodology involving observations for data collection was key in illustrating this under researched topic.

**Keywords:** Augmented Reality, Millennials, Consumer behaviour, Shopping centre, AR games

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## 1. Introduction

Augmented Reality (AR) is poised to perform a pivotal function in human life by penetrating several sectors like entertainment, healthcare, tourism, education and especially retail. Although used predominantly in entertainment (and more specifically, gaming), AR has the potential to revolutionise several industries.

Pokémon Go is a classic exemplification of successful AR in gaming wherein the application was downloaded more than 500 million times in 2016 thereby popularising location-based AR gaming. In Pokémon Go, players were able to catch virtual creatures hidden in real-world locations using smart devices and due to the popularity of the game, it was considered one of the biggest mobile games in history (Rauschnabel et al., 2017). Although such games are getting common, consumer research in this domain is still underexplored from a marketing context; especially from a promotional perspective.

A major shopping centre based in Melbourne, Australia created a promotion with a 'retro gaming festival' involving GamerVSGamer competitions, gaming arcades set up with 80s themed games, a scavenger hunt based on AR, and other activities. For this report, the study focusses only on the AR based scavenger hunt that was created on a platform called Metaverse. Metaverse is a democratised platform which can be used by a content creator to create content on AR and game developers can create AR based scavenger hunts, interactive stories, trivia games, etc on this platform and share it with other people so that they can access the content (game, trivia, etc) via Metaverse's app. The promoter of the AR game (sponsored by the shopping centre) used Metaverse to create a scavenger hunt for players wherein the players had to collect five in-game items to redeem a gift. Compared to the traditional scavenger hunt where players must find and collect specified objects in the real world (physical locations in a predefined extensive outdoor area), the AR based scavenger hunt placed 5 items in the virtual world (accessible through Metaverse's applications) but these locations were in 5 different spots within the shopping centre. This meant players had to go to five different spots in the shopping centre and then, using Metaverse app, claim these items through their application.

## 2. Aim

Current AR research in the marketing context focuses predominantly on AR applications that can enhance the user experience while engaging in buying or gaming behaviour (Scholz and Duffy, 2018, Shin, 2017). However,

in this context, the shopping centre created an AR application that did not enhance the user experience in the shopping environment as they employed the AR game only as a promotional tool to attract patrons to the shopping centre, play the game, and redeem gifts. Therefore, there was minimal interaction with other retail outlets (within the shopping centre) and their products. Since current research does not focus on the influence of such AR based games (as promotional tools) on consumer perception, this study explores this through an ethnographic study. Therefore, study aim to answer the research question “What is the role of promotional AR games on the behaviour of millennial shopping centre patrons?”

### 3. Literature Review

#### 3.1 AR in marketing

AR involves the visual alignment of the real-world with virtual content and can be defined as the real-time direct or indirect view of a physical environment by augmenting it through addition of virtual computer-generated information over the physical environment (Carmigniani and Furht, 2011). A key difference between Virtual Reality and Augment Reality is that AR ‘augments’ reality by immersing users in a virtual world but allowing them to view the real world at the same time.

Although AR has been employed in different marketing contexts such as consumer behaviour (Javornik, 2016) and user experience (Shin, 2017) it is predominantly used in retailing. For example, as Grewal et al. (2017) illustrate, car dealerships employ such technology to show consumers how different components will look on the customer’s car. Likewise, there are studies on the role of AR in furniture retailing (Rese et al., 2014), eyewear and makeup (Hilken et al., 2017, Scholz and Duffy, 2018), gaming (Shin, 2017, Rauschnabel et al., 2017), and such. Though some segments of customers are averse to such technology in the retailing sector, a majority of consumers prefer to use such tools in retailing as it enhances the user experience or the functionality of shopping (Kim and Forsythe, 2008, Poushneh and Vasquez-Parraga, 2017). Likewise, retail brands like IKEA, Wayfair uses AR shopping application enable consumers to virtually try the product prior to purchasing the product. IKEA’ app named IKEA Place lets customers ‘place’ furniture in their own space (at homes or offices) virtually thereby improving the user’s shopping experience. However, this is a major research gap in current AR studies in marketing as currently, research focuses on AR’s use in a retail setting predominantly (Dacko, 2017, Poncin and Mimoun, 2014, Poushneh and Vasquez-Parraga, 2017, Rese et al., 2014).

#### 3.2 Flow and Immersion

Csikszentmihalyi (1988) explored the concept of flow and defined flow as “the holistic experience that people feel when they act with total involvement”. This determines the level of immersion wherein a user is absorbed in a specific activity to such an extent that their concentration and awareness are limited (and narrowed) to that activity. In higher states of flow, people lose reflective self-consciousness and perceive a distortion of temporal experience (Rauschnabel et al., 2017, Csikszentmihalyi, 1988). Shin (2017) explored this through studying immersion in an AR game and immersion, as defined by Shin (2017) in the AR gaming context pertains to the ‘user’s sensation of involvement in the AR world’. A measure of engagement, Shin explains immersion as a state in which the gamer forgets “actual surroundings, present identity, situation, and life and immerses him/her self in a world of imagination, adventure, and exploration.

In gaming literature, higher degrees of flow or immersion is considered ideal since it is rewarding to the player and is a testament of the quality of the gaming experience (Rauschnabel et al., 2017, Shin, 2017, Hsu and Lu, 2004). Even within marketing literature, flow is considered in social media platforms like websites and there is a higher degree of flow when consumers are engaged with the website of a brand, this results in increased consumption (Bridges and Florsheim, 2008). However, in the present study, the shopping centre created the scavenger hunt as an AR game and an increased level of flow might not be beneficial as the core function and purpose of the shopping centre is not the game, but the retail outlets and their products. Through this study, the researchers aim to understand the influence of a promotional campaign through an AR game on millennials’ behaviour towards the shopping centre and the AR game and vice versa.

### 4. Method

A shopping centre based in Melbourne, Australia was selected as the context for this multi-method ethnographic qualitative research. The shopping centre has an open-air design with more than 120 retail stores including a supermarket, department stores, restaurants, food court and fashion boutique stores

running down its laneways and with such a design, this shopping centre is an excellent arena for a scavenger hunt. Therefore, the shopping centre created an AR based scavenger hunt as a promotional tool with 5 in-game items that players are to collect from locations around the shopping centre. For this, using an application (Metaverse), players are to walk through the laneways and collect the five in-game items and display this to a company representative and then, claim a gift. Prior to the collection of empirical data, (including observations and interviews), the researchers went to the shopping centre and played the game on both iOS and Android devices to understand the game flow and the processes involved in engaging in gameplay.

The study employed a multi-phased study with multiple stages of ethnographic research as this method of research is ideal in observing how participants interact with each other and engage in the gaming experience with an objective to understand the millennial gaming culture and the impact of AR in consumer behaviour (Eriksson and Kovalainen, 2008). For this study, Angrosino's (2007) three modes of data collection in ethnography; observation, interviewing, and archival research were employed.

Observation, as Fetterman (1998) and Sangasubana (2011) implies, is unique because it combines the researcher's participation with participants of the study while maintaining a professional distance. In this study, the researchers observed groups of young adults engaged in an AR game in the shopping centre. This is critical for this study in terms of observing the 'flow' or the level of immersion in the participants. While engaging in gameplay, the researchers observed the state of immersion among the participants and its impact on participants' consumer behaviour.

Sangasubana (2011) defines archival research as the analysis of existing materials "stored for research, service or other purposes officially and unofficially". For this, the study commenced with review of literature in which the researchers reviewed relevant academic articles and industry publications exploring the impact of AR in marketing. Secondly, the study employed a webnographic study. Webnography or netnography builds on virtual ethnography; which is the process of conducting an ethnography using the virtual, online environment as the site of the research (Evans, 2010). Ferris (2011) illustrates that like traditional ethnography wherein the researcher immerses himself or herself into the life of a social group, webnography does the same over the World Wide Web to collect data. This is ideal for studies with millennials as participants as millennials employ social networking platforms to post their 'intimate thoughts, dreams, and worries' (Ferris, 2011). For this, the researchers employed an observational rather than a participatory webnography of social networking platforms. Here the study examined and conducted a sentiment analysis of the social media posts during AR game promotion on three different social medial platforms (Facebook, Instagram, and Twitter) to understand consumer perception of the AR game campaign. In addition to the same, the researchers reviewed blogs pertaining to the AR gaming events in Melbourne and particularly, the AR game promoted by the shopping centre.

Next, the study employed an interview process which involved interviewing the participants using a semi-structured interview guide to explore the perceptions of the shopping centre, AR technology and the relevance of ARG in marketing. For this, the researchers interviewed 17 millennials who had played the AR game in the SC. The interviews ranged from 15 to 35 minutes. This meant that the respondents formed a convenient sample and were recruited by researchers. The average age of the students was 20 years old with gender balance of 60% male and 40 % female and a total of 17 students were selected to participate in the research by playing the AR game at the shopping centre and were interviewed using semi structured in-depth questions within 1 week of playing the AR game. The participants used their smart phones and were instructed to download the Metaverse app prior to playing the AR game.

## **5. Findings**

The key findings for this paper are divided into three parts in this section; the impact of AR games on new customers, the influence on younger customers (millennials), and finally – the role of immersion in ARG on the promotion. These are explicated under:

### **5.1 New customers**

One of the key findings was the impact of playing this scavenger hunt on an AR platform by millennials who were unaware of the shopping centre and the retailers within it. When asked about the impact of this game on perception of the shopping centre, a respondent stated this:

*“Actually, I get to know about the \*SC after playing the game. I get to know about the place and the shops and the foods and everything.”*

This quote demonstrates that such a promotional campaign is beneficial in improving the knowledge of the shopping centres visitor. This is achieved through the strategic placing of different in-game items along the shopping centre to ensure that the players walk around the entire SC to claim the in-game items. Through this, the gamer is exposed to more stores and physical locations than they normally would. This was echoed by another respondent who stated this when asked about the location of the items and how they marketed the SC through the game.

*“I do remember the strawberries and the coffee thing. So, they were like showing to people like what they have regarding this grocery store with the sign of this strawberry thing. They got this thing of burger so it’s like saying to the customers like we have good restaurants here on this side and then we got this coffee cup thing, so they were like saying on this location we got the best coffee, we got the coffee shops here, that’s the way of marketing. They were guiding people throughout this grocery shops, restaurants and coffee shops.”*

Therefore, to attract new customers who are unaware of the shopping centre and its different stores, shops and restaurants, having such in-game items located near these premises introduces them to these “new” retail businesses. However, a regular customer of the shopping centre commented on the impact of this campaign and if there was any change in perception before and after playing the game, by stating this:

*I think not really. I didn’t change my mind because \*SC is a good place and I know that, and the game is just a part of that \*campaign. We went there and played the game and that all we did.*

As evidenced by the above statement, such AR game participation are effective in attracting new customers to a shopping centre and therefore, can be used as a promotional campaign for attracting new customers including students, tourists and office workers using an AR game. However, the impact on existing consumers is questionable due to the functionality (or the lack of thereof) of such augmented reality-based promotions.

## **5.2 Influence on younger consumers and rewards**

This study focussed on millennials and their perspectives towards AR games and the implications in the marketing of traditional shopping avenues. A key finding of this study was the impact of such promotional activities on the millennials’ consumer behaviour.

In this promotional campaign, the shopping centre had integrated itself with a social media campaign and thereby, related to the younger generation and this was stated by a millennial gamer:

*“I think \*the SC tried to make it popular and attract different age groups through tier use social media marketing... Of course, more people talk about this game (online). Think the SC could get more people to talk about it and these activities make it possible.”*

This refer to the engagement of the AR game with Social Media Marketing as the gamers were encouraged to play the game and post about this on social media through different social media platforms; especially Instagram and Facebook. By engaging the younger consumers through an AR game and relating it to a social media strategy, the shopping centre was able to attract the younger generation of shoppers. However, such a group of gamers were attracted not only by the game but also by the prizes associated with the game. After the collection of all the five in-game items and upon showing it to the game promoters, the gamers went into a draw wherein they could get a lot of prizes. Almost everybody who played the game received a prize and this positively motivated the gamers to engage with the game. This was evident not only in the interviews, but also through the posts that gamers had posted on social media platforms and observations. Therefore, as evidenced by the gamers’ intention to play, a tangible benefit must be perceived by the gamers to engage with a ‘promoted’ Augmented Reality game.

## **5.3 Immersion**

While observing the participants engaged in gameplay, they exhibited a high degree of flow while playing an AR game. This was evidenced through them walking around the shopping centre to ascertain the location of

the in-game items and claim them on the app. During the process of walking towards the in-game items, they had bumped into other patrons of the shopping centre and this illustrates the level of immersion in the same.

## 6. Conclusion and recommendations

In this study, the researchers aimed to ascertain the influence of an AR game as a promotional tool for a shopping centre based in Melbourne, Australia. Based on an ethnographic study involving observation, webnography through social media platforms, and interviews, the study concluded that AR games as a promotional tool can potentially improve brand exposure and develop high foot traffic for traditional brick and mortar retailers. This is a significant factor as millennials are averse to shopping through traditional retailers and therefore, such technologies can potentially be beneficial to traditional businesses trying to influence young consumers. However, AR games as a promotional campaign is beneficial in attracting new customers to a shopping centre and not in retaining existing customers as they do not find value in the AR game. This is so since promotional AR games (in this context) does not enhance the user experience involved in shopping and this is a significant finding since current AR research focuses predominantly on AR applications that enhance the user experience as they provide some input to the shopping process (through placing of furniture in IKEAPLACE or virtually trying on makeup on Sephora's makeup application). Since current studies focus on such applications which improves user experience, the impact of AR as a mere promotion activity has never been explored and the study contributes to this research gap in literature by showing that AR games as a promotional tool is ideal in attracting new customers; but will not potentially influence customer retention due to low value perception. As an avenue for future research, scholars must ascertain the value of improving AR games by enhancing the user experience from a marketing perspective.

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# Locus of Control in University Students

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**Abstract:** The concept of locus of control as a personality characteristic clarifies the differences between two tendencies of a person to assign his/her influence on his/her life events. It is either the person's tendency to explain his/her life events as something he/she cannot control by himself/herself or the person's tendency to explain the events as events he/she can control. The article presents the data of a study ascertaining the locus of control in Bachelor university students of economic and technical disciplines (N=42) and in students of humanistic social work studies (N=44) from two South Bohemian universities. The study made use of a standardized questionnaire with 24 items at IPC scale, consisting of three subscales: I - internality (i.e. the person perceives himself/herself as the one who has control over his/her life), P (the person perceives the life as influenced by important people) and C (persons with a high score perceive the world as chaotic and unpredictable, they do not believe to be able to control their lives, they see their good results as consequences of chance or good luck). The data were statistically evaluated in order to identify the difference in locus of control in both groups. The t-test results show a significant relation between the student groups in the internality score ( $p=0.038$ ) where students of economic and technical disciplines achieved a higher score (13.38) as compared to students of social work (9.54). However, no statistically significant relation was found at the dimension of control by important people (-7.08 and -5.19) or at the dimension of control by chance (-3.73 and -5.56). So it can be stated that the students of social work tend rather to explain events based on external factors, while students of economic and technical disciplines explain them rather based on internal factors. The control by chance can be found the least often in university students. The study will also compare the locus of control of university students with other subpopulations.

**Keywords:** locus of control, university students, social psychology, externality, internality

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## 1. Theoretical basis

### 1.1 Locus of Control

Locus of control (LOC) is a term in social psychology describing the approach to perceiving reasons and causes of events around us. The term is closely connected to other terms, such as self-efficacy – perceiving personal efficacy, responsibility, and decision-making (Judge et al, 1997). LOC affects our lives in many ways, e.g. it influences our ability to solve problems, learning, dealing with stress. It also affects our health and being satisfied in our lives (Roddenberry and Renk, 2010). Rotter (1966) divides LOC into internal and external by using the Internal-External Scale, i.e. the I-E scale. This scale uses a series of questions and explores if an individual perceives more of internal or external LOC. The two categories of LOC are however not polar opposites, in which the internal LOC would cancel out the external LOC, but rather as a dual categorization, in which the two categories are opposites but take place at the same time (Lefcourt, 1976). The I-E scale shows if the individual prefers internal or external LOC (Furnham and Steele, 1993).

### 1.2 Internal Locus of Control

When applying internal LOC, the individuals accept personal responsibility for things, situations, or events happening in their surroundings. In their perception, their behavior depends on their decisions and actions. The individuals then are able to realize their own wrong behavior and learn from it. They accept responsibility for their actions. At the same time, they perceive their success in life as a result of their personal actions and decisions (Carlson, 2010). If the student with internal LOC takes a test at the university and receives a negative grade, he/she will explain the situation with not having studied enough, making it their own fault (responsibility), and think that if he/she studied enough, they would have passed the test. If this internal LOC student receives a good grade, he/she understands it as their own success, which he/she achieved by him/herself, for example by studying for the test, paying attention during class, etc.

### 1.3 External Locus of Control

In external LOC, the student does not take personal responsibility for things, situations, or events happening around him/her. His/her actions are in his/her opinion not dependent on his/her decisions and actions. The individuals do not take personal responsibility for their actions, look for reasons in their surroundings. They do not perceive things and events in their lives as a result of their own actions or decisions but as a result of external influences in their surroundings, for example other people, chance, fate, a higher power (Jacobs-

Lawson et al, 2011). If the student with external LOC takes a test at the university and receives a bad grade, he/she will justify it by saying that the test was difficult, that he/she just had bad luck, that the questions were bad, that the teacher was bad, that he/she could not have done anything about it, that it is not his/her fault that he/she received a bad grade. If the student with external LOC received a good grade, he/she would not see it as his/her success but as luck or chance, e.g. by the test being easy or that a higher power influenced the results, etc.

#### **1.4 Internal versus External Locus of Control**

The presented LOC examples of students clearly demonstrate the duality of this term. For successes, people can use internal LOC, for failures the external LOC, or vice versa (Buchanan and Seligman, 2009). It is important to realize that neither external or internal LOCs should be categorized as positive or negative. With extreme internal or external LOCs, the individual stops perceiving reality, which can lead to pathological phenomena (Benassi et al, 1988). The individual should therefore focus on discovering rational or exact LOC (Jacobs-Lawson et al, 2011). If the student with this perception approach takes a test at university and receives a bad grade, he/she realizes that he/she could have studied more for the test but only within realistic circumstances (e.g. for maximum of four hours), and at the same time being able to realize that the test was badly constructed, for example by not including the topics discussed in class, etc. – the student is capable of adapting to this situation.

The perception of LOC can vary for different individuals and in certain situations (Duttweiler, 1984). For example, an individual can use more external LOC in interpersonal relations, which means that he/she will claim that he/she cannot influence how people around them perceive them or like them. The same person can then in their professional live use more of the internal LOC – understanding all successes and failures as a result of their own actions and behavior despite working in a group of colleagues.

#### **1.5 Locus of Control research**

Gifford et al (2006) discovered a dependency between LOC and the grades of the students in the first university semester. Male students tend to have more of internal LOC than female students. It was discovered as well, that the students with internal LOC also achieve better studying results than students with external LOC. Additionally, the students with external LOC are at a higher risk of dropping out of university, since the studies get increasingly more difficult and the students need to rely more on themselves. Khaleghinezhad et al (2016) found the same dependency between LOC and study results, according to their study, however, it does not depend on the student's sex.

Janssen and Carton (1999) found a dependency between LOC and university students procrastinating. Students with internal LOC procrastinate shorter than students with external LOC.

Abouserie (1994), Gifford et al (2006), Karaman et al (2017) found out that students with external LOC have a higher level of academic stress. Karaman et al (2017) also state that students with external LOC tend to be less satisfied in their lives. Twenge et al (2004) focus on LOC changes of students between 1960 and 2002. They confirmed the previous trend that suggested that the level of external LOC among students keeps increasing. increases in cynicism, individualism, and the self-serving bias. The implications are almost uniformly negative, as externality is correlated with poor school achievement, helplessness, ineffective stress management, decreased self-control, and depression.

## **2. Methodology**

Questionnaires measuring the locus of control, however this one is one of the most frequently used, which is why it was selected for this study. The questionnaire is also special since it uses three categories of locus of control instead of the standard two categories. The individual items are represented by statements that is in its meaning connected to a concrete dimension of the locus of control. The respondent selects a level of agreement with the statement on a six-tier Likert scale with the range from -3 to 3. For the Czech Republic, the IPC scale was psychometrically verified by the works of Paulisová (2009) and Petrášová (2013).

The following hypothesis was set:

H0: The average score of the individual categories of the LOC test for students of different disciplines varies.



### 3. Results

The research set consisted of full-time bachelor students at two South Bohemian universities. They were students of economic and technical programs (N=42) and humanities students (N=44). Those two groups differ and were selected so that it is possible to compare the expected differences in the use of the locus of control.

The data was collected anonymously, the respondents were introduced to the study's goal and use. The data was collected by the author of the research via a questionnaire handed out in class.

The data was then statistically processed in the SPSS program by using descriptive statistics and a t-test for two independent groups (Test of the average of two independent quantitative data for verification of the zero hypothesis to see that the averages of the said data will be equal.)

The test results ranged from 22 - 48 in case of the internality dimension, the mean value being 35.42 (sd = 5.55) and the median, 34. The range from 4 – 35, together with the mean of 17.86 (sd=6.09) and the median of 17, was identified in the dimension of control by powerful people; in the dimension of control by chance, the respondents scored a minimum of 1, a maximum of 35, the mean of 19.36 (sd=7.40) and the median of 19.5.

- The t-test results show a significant relation between the student groups in the internality score ( $p < .01$ ) where students of economic and technical disciplines achieved a higher externality score (37.36) as compared to students of social work (33.36). However, no statistically significant relation was found at the dimension of control by powerful people (16.93 in humanities and 18.83 in technical disciplines) and at the dimension of control by chance (20.25 in humanities and 18.43 in technical disciplines). So it can be stated that the students of social work tend rather to explain events based on external factors, while students of economic and technical disciplines explain them rather based on internal factors. Other dimensions do not show significant differences between groups, but a trend of students of technical disciplines emphasizing external causes in the intention of Powerful Others and of students of humanities rather emphasizing the dimension of Chance is evident.

**Table 1:** Dimension IPS

Dimension IPS	Disciplines	Mean	SD	t	p
Internal	humanities	33.52	5.708	-3.349	.001
	technical	37.36	4.710	-3.364	.001
Powerful Others	humanities	16.93	6.259	-1.457	.149
	technical	18.83	5.822	-1.459	.148
Chance	humanities	20.25	6.648	1.143	.256
	technical	18.43	8.088	1.138	.259

### 4. Discussion and conclusion

The sample was not analyzed with respect to genders, as it was gender-unbalanced. In humanities, the data were acquired from women in 95.45 % of cases, while in the technical and economic disciplines, men prevailed in 71.43 %. The only gender difference in Levenson's original sample of 96 male and female adults was on the Powerful Others scale, with males attaining a significantly ( $p < .05$ ) higher mean score (18.85) than females (14.64). Other studies also emphasize the difference in the dimension of Powerful Others or even find an absence of gender differences (Sherman, Higgs & Williams, 2007). With respect to the differences between technical disciplines and humanities, which could be seen only in the internality dimension, the balance of groups does not constitute a methodical problem.

The research has shown differences in the place of control among the technical and humanities studying. The topic has not been reviewed yet. The outputs were useful to improve career diagnostics. Students with higher internal LOC are more suitable for leading positions than students with external LOC, as they are able to assume responsibility for their acts and thus they are more ambitious, want to improve, etc. On the other hand, students with external LOC tend to have worse school result. Helplessness, depressions, bad stress management, etc. (Twenge et. al., 2004)

This study may help to choose graduates for job positions; Dálek compares the differences between students of technical disciplines and humanities and examines the trend in LOC development in students. Theoretically, the study could suggest helping the students to acquire rather the internal LOC, as the external LOC is related to negative impacts not only on studies.

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# The Utility of Visual Methods in the Research Odyssey

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**Abstract:** Over the past few decades, there has been widespread use of visual methods in the research process in traditional disciplines such as sociology and anthropology, as well as in newer subject areas including graphic design and visual analytics as spurred by the latest technological developments. Visual methods used in the research process have been described as covering ‘a range of methods and practices that involve the use of visual media and technologies in all stages of research’ (Pink 2003, p. 1185). However, since each academic discipline seems to have its own way of defining visual methods in research, it may be more appropriate to provide a generic description rather than a definition focusing on non-linguistic images and how they are used as a source of data, as a method of data analysis, and as a means of data representation (Siegesmund 2008, p. 940). Using part of the research activities undertaken in one research study, this paper demonstrates the utility of word clouds and tree maps as visual methods. The paper demonstrates how these methods enable sophistication in data analysis and representation. However, these visual techniques are not adequate means of data analysis and represent on their own. For instance, word clouds could be considered ‘unsupervised clustering’ (Gambette and Véronis 2010, p. 561); while tree maps do not allow more sophisticated analysis of individual transcripts. Therefore, it is the researcher’s responsibility to ensure that such visual techniques are used in conjunction with other methods to ensure comprehensive analysis and representation of the research odyssey.

**Keywords:** Data analysis, Data representation, Qualitative research, Tree map, Word cloud

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## 1. Introduction

According to Reavey (2011, p. xxvi), visual research methods within social science have grown significantly over the past three decades. Visual methods were first used in sociology and anthropology in the early 20<sup>th</sup> century in the ‘early ethnographic photography of poverty in Europe, colonial subjects overseas, and the production of films about other cultures made during anthropological and exploratory expeditions’ (Pink 2003, p. 1185). In the 1980s and 1990s, a changing theoretical atmosphere challenged the notions of objectivity, particularly amongst qualitative researchers; and this slowed the momentum in visual research developments (Pink 2003, p. 1185). In the subsequent decades, the notion of reflexivity—where researchers acknowledged their own subjectivity in the sourcing, analysis and presentation of data—reignited visual research methods, particularly in qualitative research (Pink 2003, p. 1186).

Visual methods used in the research process have been described as covering ‘a range of methods and practices that involve the use of visual media and technologies in all stages of research’ (Pink 2003, p. 1185). These methods enhance *sensemaking*—that is, ‘a process of comprehension by which human beings formulate a plausible understanding and explanation from information’ they receive from the world around them (Wheat *et al.* 2016, p. 151).

Since visual methods encompass a broad range of methods and practices based on the disciplinary biases of fields ranging from sociology and anthropology to information science and graphic design, there is hardly one agreed-upon, concise definition.

## 2. Visual methods: a framework rather than a definition

Since each academic discipline seems to have its own way of defining visual methods, it would be more appropriate to provide a generic description rather than a definition. Visual methods tend to focus on non-linguistic images that may be used as a source of data, as a method of data analysis, and as a means of data representation (Siegesmund 2008, p. 940). Using this framing of the three stages of the research process, this section provides disciplinary examples.

First, as a source of data, visual methods have been used in travel and tourism research. Pocock *et al.* (2011, p. 108) argue that video diaries should be considered as an innovative methodology in tourist experience research, considering that tourism is a highly visual experience, even though word-based research seems to dominate.

Second, as a method of data analysis, visual methods have been used in the discipline of enterprise architecture, which is an approach to improve the alignment between the organization's business and their information systems (Dang and Pekkola 2017, p. 130). Visual analysis is fundamental in the development models such as enterprise architecture for records professionals (Katuu 2018). Visual methods are also at the core of the emerging discipline of visual analytics, which is defined as 'the science of analytical reasoning facilitated by visual interactive interfaces' (Thomas and Cook 2006).

Third, visual methods are also often used in data representation. For instance, they are present in virtual heritage modelling which involves three-dimensional animation and visualization technologies as well as augmented reality technologies (McKemmish and Gilliland 2013, p. 109). In addition, in web analytics—which entails the measurement, collection, analysis and reporting of Internet data for the purposes of understanding and optimizing web usage—visualization methods are used to prepare reports on the data collected (Digital Analytics Association 2008, p. 3, Katuu 2016a).

### **3. Visual methods in specific disciplines**

Even though visual methods seem to have a nebulous definition beyond the very generic description of the term, they are critical—particularly in social science disciplines—for several reasons. First, Spencer (2010, p. 1) argues that 'the visual is recognized as central to the human condition and to expressions of humanity and which pre-date language, affecting our emotions, identities, memories and aspirations in a most profound way. We are visual beings in a world which is a visual array of meaning'. In addition, many researchers—particularly in the social sciences disciplines—have often undervalued visuals, often relegating their use to merely subsidiary illustrations of written text (Spencer 2010, p. 1). Lastly, since the early 1990s, the use of new available visual media and technologies has been fostered by increasingly higher quality, lower cost, and greater ease of use (Pink 2003, p. 1185).

While visual methods currently maintain popularity among researchers, they are 'employed and understood slightly differently across the social sciences because in each instance, they are informed by the theoretical and methodological priorities of the discipline concerned' (Pink 2003, p. 1186). For instance, data visualization is where information is 'abstracted in a schematic form to provide visual insights into sets of data' that enable the representation of 'abstract numbers in a computer program (ones and zeros) to visual interpretation of data' (Ursyn and L'Astorina 2018, p. 602). Similarly, text visualization entails 'converting textual information into graphic representation that enhances understanding information without having to read the data for instance by using tables, histograms, pie or bar charts, or Cartesian coordinates' (Ursyn and L'Astorina 2018, p. 602). Both data and text visualization represent the third stage of the research process: data representation.

Visual analytics is 'the science of analytical reasoning facilitated by interactive visual interfaces' that combines 'automated analysis techniques with interactive visualizations to allow the user to interact with, explore and analyse big and complex data, both dynamically and visually' (Varga and Varga 2016, p. 143). Understood in this sense, visual analytics spans two of the three stages of the research process: method of analysis as well as data representation.

Graphic design visual research is an approach to systematic enquiry and investigation that underpins the notion of problem solving using visual tools and methods (Bestley and Noble 2011, p. 9). Understood in this sense, visual research may span all three stages of the research process.

These examples demonstrate that there are multiple research approaches for conceptualizing these visual methods which use non-linguistic visual data (Siegesmund 2008, p. 940).

### **4. Applying visual methods: word clouds and tree maps**

This paper uses a research study that analysed the management of records in public health care institutions in South Africa. The study demonstrated how, during the course of a larger research process, visual methods could be among the activities undertaken to facilitate the process of data analysis. (Katuu 2015).

The research study had three research objectives (Katuu 2015, p. 14):

- Assess the legislative, policy, and regulatory framework within which records are managed in public health care institutions

- Assess the extent to which public health care institutions are managing records
- Identify appropriate records management interventions at both policy and operational level in order to assist the management of records in health care institutions

Part of the research activities included interviewing 22 respondents from diverse backgrounds in the public and private sectors as well as in academic and research institutions in order to provide a composite picture in addressing the research objectives (Katuu 2015). The study used the same semi-structured interview schedule for all respondents. The length of the interviews varied from 3 minutes 32 seconds to 1 hour 30 seconds. The total length of the interviews was 9 hours 6 minutes and 8 seconds which made the average time 27 minutes and 18 seconds (Katuu 2015, p. 205). The interviews were then transcribed and coded using NVivo, a program which is ‘specifically designed to help identify and code thematic phrases’ (DuBose-Morris 2014, p. 56).

According to Newby (2013, p. 459), the process of analysing qualitative data entails ‘shaping data into a form where it can be interpreted’ in such a way that it contributes to ‘an understanding of the research issue’. Even though the study used the same semi-structured interview questions that elicited over 9 hours of interview material, there was great variation in the individual durations with one extreme being 3 and half minutes while the other slightly over 1 hour. For this reason, this study began the analysis of data by first using two visual techniques: word cloud and tree map. These visual techniques informed the research paths to be taken in subsequent data analysis including using word and thematic comparisons in individual respondent’s transcripts. For purposes of this article the other analysis techniques will not be discussed since there are not visual techniques.

**4.1 Data analysis using the word cloud technique**

According to Pope et al (2000, p. 116), the initial stages in data analysis require researchers to immerse themselves in the raw data by ‘listening to tapes, reading transcriptions, studying notes and so on, in order to list key ideas and recurrent themes’. One of the ways researchers immerse themselves in raw data is looking at how certain words were used by the respondents through a word cloud analysis. A word cloud is a visual depiction, typically used to provide a visual summary or a semantic view of an item or a cluster of items that have something in common (Carmel *et al.* 2012, p. 2). A word cloud is a weighted listing of words or metadata to visualize their frequency distribution; and the larger a word is within the cloud, the more frequently it is within the content (Cui *et al.* 2010).

This study used NVivo to initially generate three illustrations of word clouds, which are graphical representations of the prominence of the words used by respondents as extracted from the transcripts using different parameters.

- The first was limited to the 50 most frequently used words in the transcripts.
- The second was limited to the 100 most frequently used words in the transcripts.
- The third was a visualization using all the words used in the transcripts.

The visualizations demonstrated that the greater the number of words are included within the word cloud, the larger or smaller the size of other words becomes within the graphical illustration. In all three cases above, the total number of words being analysed didn’t change; the only aspect that changed is the number of words included in the visualization.

However, there was a marked difference when the total number of words being analysed changed. The NVivo tool allows for the analysis both of exact words as well as of synonyms—doing so by automatically combining words with similar meanings. In this study NVivo automatically detected the synonyms and Table 1 provides a comparison between using exact words in the first column and using synonyms in the second column.

**Table 1:** Comparison between exact words and synonyms in word frequency

Exact words	% frequency	Synonyms	% frequency
Records	1.58%	Records	1.71%
Know	1.24%	Number	0.85%
Think	1.15%	Act	0.78%
One	1.00%	Activities	0.70%
Information	0.96%	Actually	0.69%
People	0.89%	Got	0.65%



1. First, several key terms such as 'people', 'health', and 'patient' are present in the one figure but are absent in the other. It is not apparent what happened to them, since there are no obviously related terms.
2. Second, the terms 'information' and 'record' seemed to have been subsumed into the term 'records'.

These observations demonstrate that the use of word cloud as an analysis tool needs to be tempered within a given context. In a study that specifically looked at the management of health records, Figure 1 would be a more representative illustration of the concepts being investigated than Figure 2 would be. Additionally, in the study, the concepts of *record* and *information* were not synonymous; and therefore, their submersion would have led to erroneous conclusions.

#### 4.2 Data analysis using the tree map technique

Tree map visualization was the second of two approaches using data in NVivo generated through text search queries. According to Shantz, Schoenberg *et al.* (2013, p. 262), tree maps can be used to visualize words and their frequencies by limiting the parameters of the text search to a range of preceding and succeeding words. In addition, the use of wild cards assists in getting all derivatives of a word. For instance, the search term 'record\*' would produce results that include 'record', 'records', 'recordkeeping', and 'recording', etc.

For the purpose of the study, two types of analysis were conducted using text search queries (Katuu 2015, p. 211). The first type of analysis examined how three specific terms had been used by respondents: legislation, standards, and regulatory issues. These terms were chosen because they were closely related to the first of the study's research objectives outlined at the beginning of Section 4.

Figure 3 provides a tree map analysis of how legislation was discussed by the interviewees.

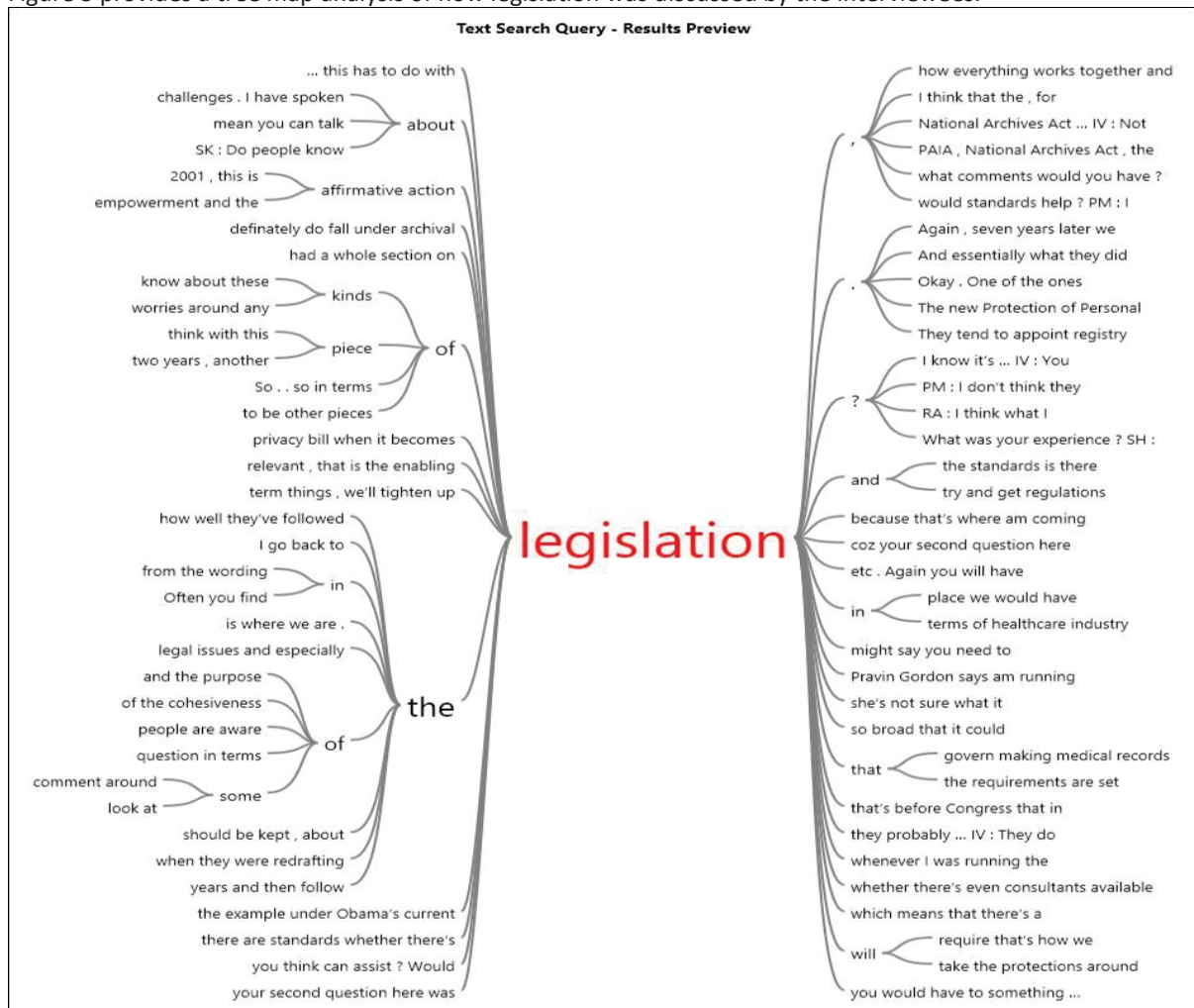


Figure 3: A tree map of the term 'legislation'

Source: (Katuu 2015, p. 212)

Figure 4 provides a tree map illustration of how issues of regulation were discussed by the interviewees.

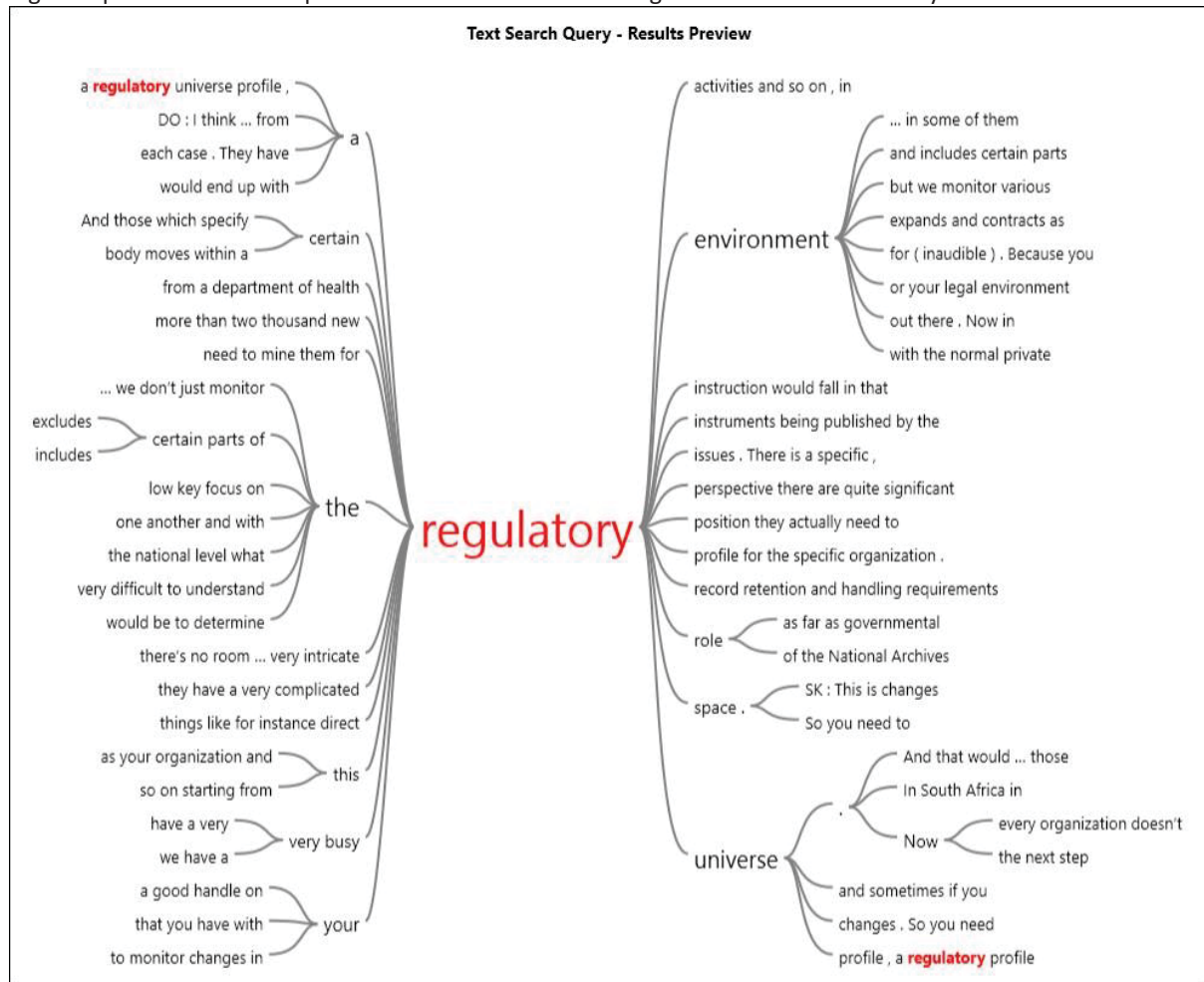


Figure 4: A tree map of the term 'regulatory'

Source: (Katuu 2015, p. 214)

Unlike the analyses of the terms 'standards' and 'legislation' above, the tree analysis of the term 'regulatory' reveals a different pattern that shows that two additional words—'environment' and 'universe'—were commonly used by the respondents. This demonstrates textual search queries' contribution in revealing trends and themes when conducting data analysis. In addition, Figure 5 reveals that the respondents didn't use the term 'regulatory framework' which one would expect to be used at least more commonly than the terms 'regulatory universe' or 'regulatory environment'. Lastly, when the three tree maps above are compared, the standards map is much larger than the others. This suggests that the respondents discussed standards more expansively than either legislation or regulations.

The second type of analysis conducted in the study compared two terms: 'medical record' and 'health record'. The study's review of the literature had revealed debates amongst commentators where some used the terms interchangeably while others preferred to create a distinction between the two (Roach *et al.* 2006, p. 32, Katuu 2016b, p. 337). Therefore, tree maps were used to analyse how often interviewees used either one of the terms.



Figure 5 provides a tree map illustration of how standards were discussed by the interviewees.

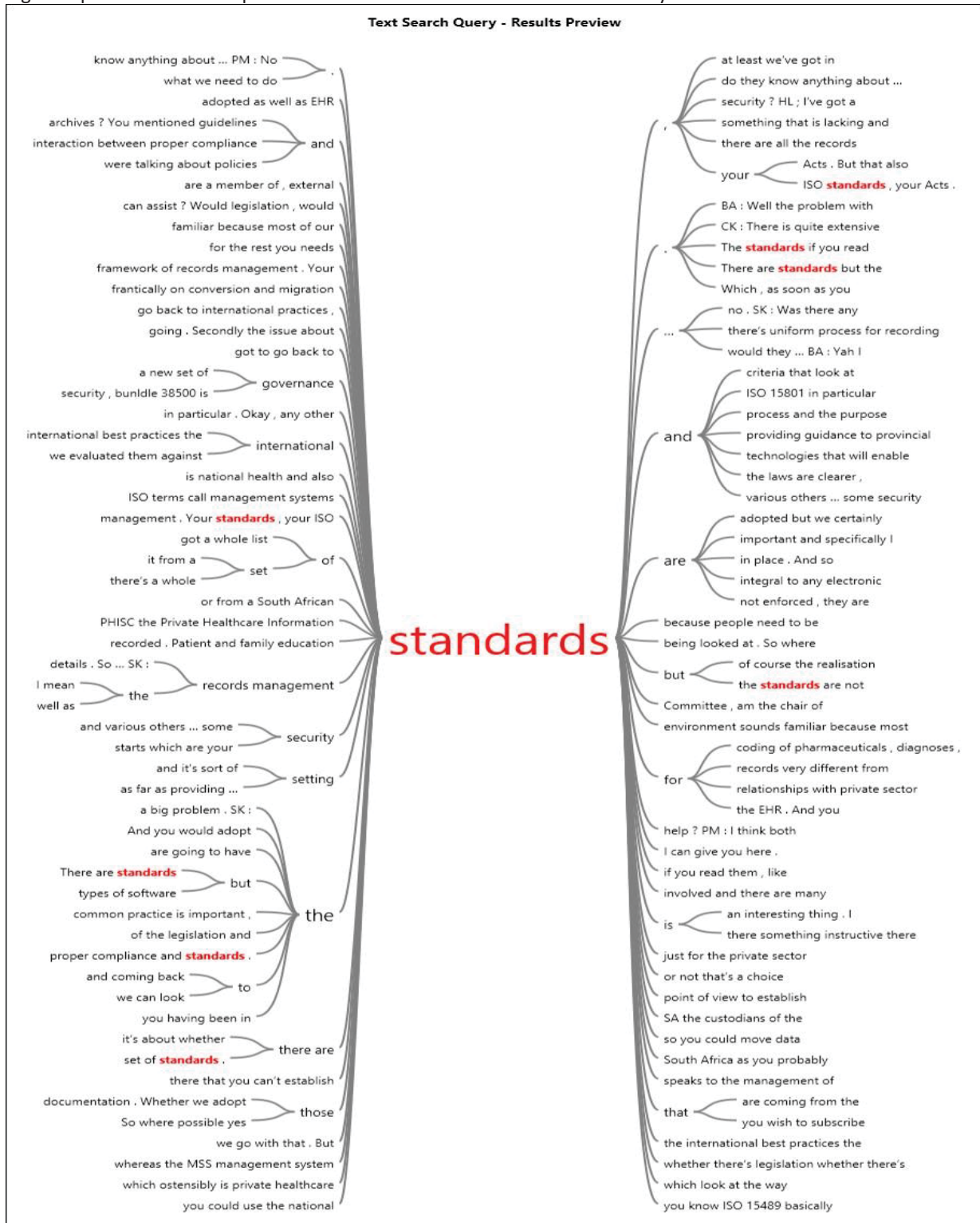


Figure 5: A tree map of the term 'standards'

Source: (Katuu 2015, p. 213)

Figure 6 illustrates how the term 'health record' was used by interviewees.

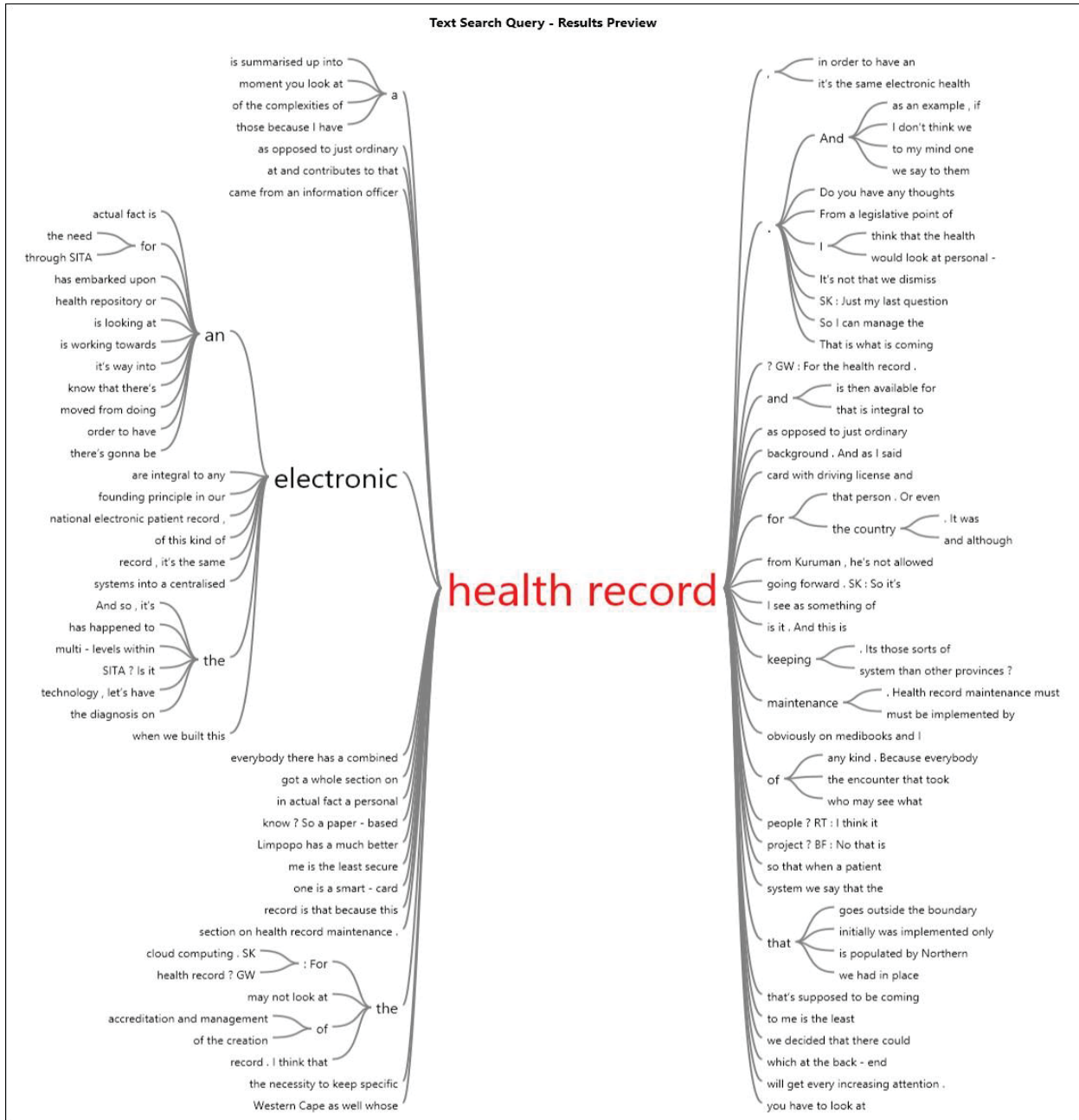


Figure 6: A tree map of the term 'health record'

Source: (Katuu 2015, p. 216)

Figure 7 illustrates how the term 'medical record' was used by the interviewees.

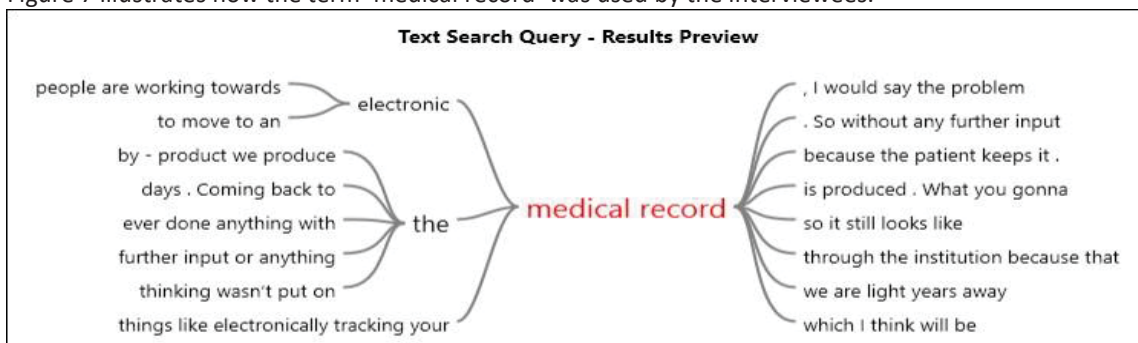


Figure 7: A tree map of the term 'medical record'

Source: (Katuu 2015, p. 217)

The two figures confirm that a dichotomy existed amongst the respondents, with the majority preferring the term 'health record'. In addition, they both demonstrate that the issues of electronic medical or health records were prominent sub-sets of the discussions.

The five tree maps above demonstrate an important aspect in the visualization of terms within a certain context—in this case, five words proceeding and succeeding the term. This visualization revealed the varied nature of the discussions with the larger tree maps as compared to the smaller tree maps. In addition, the visualization divulged a sub-set of the discussion that may have otherwise been difficult to reveal. According to Winburn (2014, p. 63), not only are tree maps useful as visual aids, but they can also be used to assist in the data interpretation process by identifying partial quotes related to research themes..

## **5. Concluding remarks**

This paper has explored the use of visual methods used in research—methods ranging from the sourcing of data, to data analysis, to data representation. It has illustrated the utility of word clouds and tree maps using some of the research activities undertaken in one research study. The paper has demonstrated that the use of both word clouds and tree maps—as visualization techniques for data analysis and representation—enable new levels of sophistication not otherwise available by merely 'eyeballing' text (in this case, more than 9 hours of transcript text).

Nonetheless, these visual techniques are not necessarily adequate on their own for data analysis and representation. According to Gambette and Véronis (2010, p. 561), word clouds remain a basic way of assessing information in very general terms and could be considered as being 'unsupervised clustering'. While word clouds offer elegant visualization of frequency, they only explore a single dimension of transcripts—i.e., the frequency of exact words and synonyms. As well, while the tree map technique is useful for visualization, there is a need to move to more sophisticated forms of analysis when examining individual transcripts.

According to Pink (2003, p. 1185), although the concept of visual research may have become commonplace, its application is rarely purely visual and typically combines visual and verbal or written methods of doing research and representing this work to others.

This paper has demonstrated that while these visual methods offer enhanced means of data analysis and representation, they concentrate on essential aspects of a subject matter, often leaving out many nuances—and therefore cannot be expected to have a complete reflection of reality (Hofman 2016, p. 636). Therefore, it is the researcher's responsibility to ensure they are used in conjunction with other means to ensure a comprehensive analysis and representation of the research odyssey.

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# Validation of an Employee Motivation Measurement Instrument in a Financial Organisation

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**Abstract:** Financial industry in South Africa seems to be complex and highly competitive environment. Operating in such a dynamic environment requires an organisation to differentiate itself from its competitors, especially in its human capital motivation. Motivated employees are the one that will enable financial organisation to perform high. Purpose of this paper was to validate the factor structure of the employee motivation measurement instrument in a financial organisation. Employee motivation was measured using the Work Preference Inventory (WPI); which has four dimensions; namely, challenge, enjoyment, outward and compensation. Data was collected from a sample that consisted of n = 341 financial organisation employees. It was hypothesised that a four-factor structure was expected to underlie the employee motivation measurement model in order to support the four identified theoretical dimensions of the scale. The hypothesis was tested by means of exploratory factor analysis and confirmatory factor analysis. Compensation was removed from the four-factor structure because of low reliability (convergent), and employee motivation measurement model was thus identified as a three-factor structure. Hence the hypothesis of this paper was rejected based on the empirical research results. This paper proposes the value of confirming the validity and reliability of a measurement model of an instrument in all research context; to ensure that its psychometric properties are valid for the population under investigation.

**Keywords:** Employee motivation; psychometric properties, exploratory factor analysis, confirmatory factor analysis

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## 1. Introduction

Employee motivation is critical for organisational performance and survival. Successful organisations appears to be characterised by motivated employees, as its valuable assets. Financial organisations such as banks require motivated employees to be able to achieve its goals and perform at high levels. Banks are part of a world of constant change, where competition is fierce. The world of business is changing rapidly because of advances in technology – communications, electronics and the use of data have contributed to the globalisation of industries (Rose, 2002). New technologies are ever present and changing expectations tends to lead to new customer demands. Hence organisations seems to be constantly faced with the challenge to motivate their employees.

The effort level the employee chooses for pursuing organisational and personal goals is determined by his motivation. An employee may form expectations about whether and to what extent his actions contribute to accomplishing these goals. As a consequence, the level of effort not only depends on the strength of the individual's motives, but also on his perception of the work situation (Jost, 2014). Bulto and Markos (2017, p. 26) suggests that there is widely accepted view that motivation tends to create a positive working situation where as lack of motivation or individual's negative perception can negatively affect organisational performance.

Banking industry in South Africa seems to be a complex and highly competitive environment (Metcalf, 2003). Operating in such a dynamic environment tends to require bank employees to fully understand all the necessary factors associated with customer service that affect their success and market share (Levitt, 1983).

One of the most common challenges for banks is how to differentiate themselves from their competitors. The profitable growth of a bank may be constrained by external factors such as the economic environment, target markets and industry structure, as well as internal factors such as branch network, technology and managerial capability for innovation and differentiation, marketing and customer relationships (Roy, 2011).

Lau and Roopnarain (2014, p 228) argue that the importance of employee motivation (intrinsic and extrinsic) to perform well in tasks is widely recognized. It is motivated employees who seems able to differentiate an organisation from its competitors; because intrinsic and extrinsic motivation has proven to be associated with employee performance. Motivation levels of employees tends to provide an organisation with a competitive edge. Hence this paper sought to validate the theoretical measurement model of factor

structure of employee motivation, as measured by the Work Preference Inventory (WPI) in a financial organisation.

## **2. Literature review of the construct employee motivation**

The concept motivation derived from a Latin word “movere” which means “to move”. Early definitions of motivation include the following: Mitchell (1982) defined motivation as those psychological processes that cause the arousal, direction and persistence of voluntary activities that are goal orientated. Westerman and Donoghue’s (1989, p. 79) definition refers to motivation as “a set of processes which energize a person’s behaviour and direct him towards attaining some goal, or put more simply getting people to do willingly and well those things which have to be done”. There are numerous motivation definitions in the literature.

According to DeCenzo and Robbins (1996), motivation is the willingness or desire to do something, conditioned by the activity or action’s ability to satisfy some need. Analoui (2000) views motivation as a drive within the individual which is necessary to direct his actions and behaviour towards the achievement of some goals.

Robbins and Judge (2008) defined it as the process that accounts for an individual’s intensity, direction and persistence of effort towards attaining a goal. Another definition of motivation is that it is a set of energetic forces that originate both within as well as beyond an individual’s being, to initiate work-related behaviour, and to determine its form, direction, intensity and duration (Pinder, 2008).

Motivation has been defined as the “drive or energy that compels people to act with energy and persistence towards some goal” (Berman, Bowman, West & Wart, 2010, p. 180). While general motivation refers to the effort towards any goal, employee motivation refers to the effort towards organisational goals. Robbins and Coulter (1996) described employee motivation as the willingness of an employee to exert some effort or action in order to achieve the organisational goals, conditioned by the action’s ability to satisfy the employee’s individual needs. Pinder (2008) added that employee motivation is a set of energetic forces that originate both within as well as beyond an individual’s being, to initiate work-related behaviour and to determine its form, direction, intensity and duration. Hence motivation can be conceived as whatever it takes to encourage employees to perform by fulfilling or appealing to their needs (Singh & Tiwari 2011, p. 31).

The effort level at which the employee chooses to achieve his goals can be interpreted as the motivational conditions of motivation. According to Jost (2014), an employee’s effort is characterised by the following three components:

- The direction of efforts: The employee can choose between different alternatives in order to achieve his goals. The direction of efforts relates to that alternative underlying his actual work behaviour.
- The strength of efforts: This component determines the degree of commitment with which the employee pursues the chosen alternative. The strength of effort can vary from a low to high level.
- The persistency of efforts: If the employee’s actions involve any obstacles, the question arises as to how much the employee adheres to his behaviour. The persistency of efforts reflects his attempts to ambitiously adhere to his behaviour over a given course of time.

According to Lord (2002), productivity tends to be a function of employee motivation. It is twofold by making employees work better, more efficiently and effectively from the point of view of managers. While the other aspect is enabling employees to do their work in the best way with enjoyment and desire from the point of view of employees (Singh & Tiwari, 2011). Motivators such as accomplishment, pay, job responsibility, promotions and recognitions enhance the job satisfaction of employees, which creates confidence, loyalty and commitment, and improves the organisation’s productivity. Employee motivation tends to be one of the management practices to increase effectual job performance among employees in organisations. A motivated employee is inclined to be responsive to the definite goals and objectives he must achieve, and therefore is inclined to steer his efforts in that direction (Manzoor, 2012). Employee performance is therefore likely to be a function of ability, job design and motivation. If the employee seems to have adequate ability and the job is well designed, then performance is likely to be dependent on the level of motivation. Assuming that ability and job design are in order, high motivation tends to become a necessary and sufficient condition for high performance (Grant, 1990). Ability, in turn, depends on education, experience and training, and improvement

is a slow and long process. Hence performance is considered to be a function of ability and motivation (Prasad, 2011).

Almost all organisations are inclined to use pay, promotion, bonuses or other types of rewards to motivate and encourage high-level performances among employees. Research conducted in Pakistan by Khan, Farooq, and Ullah (2010) examined the relationship between the four types of rewards and employee motivation. The results of the study showed that recognition correlates significantly with employee motivation. According to Constant and Offodile (2001), employee participation and empowerment not only direct efficiency, effectiveness and innovation, but also tends to boost employee gratification, work motivation and trust in the organisation. Motivated employees are required as a strategic tool in organisations (Safiullah, 2014).

### **3. Problem statement and hypothesis**

The previous section presents the role and value of employee motivation in an organisation. There are several measures of employee motivation, these measures tend to focus on different aspects of motivation (intrinsic and extrinsic motivation). Intrinsic and extrinsic motivation seems to represent a substantial portion of employees' experiences when involved in their work roles in an organisation (Vellerand, 1997). Hence conceptual and methodological advances tend to support a multidimensional approach to the study of motivational phenomena. The conceptual and theoretical model of the Work Preference Inventory (WPI) which was developed by Amabile et al. (1994) as a measure of employee motivation; is also based on the multidimensional approach. It was designed to measure whether adults perceive themselves to be intrinsically and extrinsically motivated towards what they do in work situations; using a four factor measurement model (enjoyment, challenge, outward and compensation). WPI was originally developed through research conducted on many different groups, including students, managers, military personnel, hospital workers and secretaries (Amabile, et al., 1994; Malka & Chatman, 2003; Moneta, 2004). The question still remains if the WPI is a reliable and valid measure sensitive to individual differences in both intrinsic and extrinsic orientation to motivation.

Martins and du Randt (2018, p 263) indicates that researchers and practitioners usually assume that a measurement instrument operates in exactly the same way in different environments and that the underlying constructs being measured have the same theoretical structure for each group under investigation. The current context in financial institutions seems to have its own unique challenges to adapt to technological and global demands. Hence it is assumed that the construct employee motivation might be perceived different due to the uniqueness of the financial institutions context. It is due to this reason that the aim of this paper was to validate the measurement model of employee motivation in a financial organisation.

Hence the hypothesis of this paper was stipulated as follows:

Hypothesis: A four-factor structure is expected to underlie the employee motivation questionnaire in order to support the four identified theoretical dimensions of the scale.

### **4. Research methodology**

The measurement instrument selected for this paper to measure the construct of employee motivation was the Work Preference Inventory (WPI), which was developed by Amabile et al. (1994). WPI consists of 30 Likert scale test items, which include the following dimensions and sub-dimensions:

- Intrinsic motivation dimension (IM): It measures the sub-dimensions challenge (items 1 to 7) and enjoyment (items 8 to 15).
- Extrinsic motivation dimension (EM): It measures sub-dimensions outward (items 16 to 25) and compensation (items 26 to 30).

In terms of the psychometric properties of this instrument, the Cronbach alpha coefficient for the WPI ranged from 0.71 to 0.78, according to study conducted by Amabile et al. (1994). This was supported by another study by Abuhamdeh and Csikszentmihalyi (2009), where the Cronbach alpha coefficient ranged from 0.70 to 0.84. Both studies revealed a minimum Cronbach alpha coefficient of 0.70 as suggested by Hair, Black, Babin, Anderson, and Tatham (2006).

Self-developed biographical question set was used to obtain information for descriptive purposes and to determine the demographic attributes of the sample. The biographical questions were compiled to gather information on the following: gender, race and age.

A list of the financial organisation employees (N = 1 234), with their contact details, constituted the sampling frame. The sample size generated (n = 341) was therefore considered an important characteristic of this empirical study. Sample consisted of 214 (62.8%) females and 127 (37.2%) males. Majority of the sample were between the ages of 34 to 49 years with a frequency of (43.7%), followed by 108 (31.7%) of 24 and 33 years, 11 (3.2%) of 18 and 23 years, and 73 (21.4%) of 50 and 69 years. Race differentiation of the sample indicated that 106 (31.1%) of the respondents were African, 92 (27.0%) were Whites, 70 (20.5%) were coloureds, 59 (17.3%) were Indian, and other 14 (4.1%). A sufficient sample size contributed towards data stability and enhanced the power of analysis when conducting significant testing.

## **5. Research findings**

During the data analysis phase, exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were performed. Firstly, EFA was performed to assess and identify the factors or dimensions that underlie the relations between a set of observed variables for employee motivation. This was followed by CFA to assess the validity and reliability of construct and measure for employee motivation.

To determine the adequacy of data researchers assessed the Kaiser-Meyer-Olkin (KMO) value and Bartlett's test for sphericity. Employee motivation (WPI) had a KMO score of 0.79, which is higher than the recommended 0.5 and suggests that the sample was adequate for factor analysis (Lance et al., 2006). Large KMO values indicate that the correlation patterns are relatively compact and that factor analysis would extract clearly separable and reliable factors. The construct employee motivation also had a score of zero for Bartlett's test, which indicates that the correlation matrix was not an identity matrix and that factor analysis could be interpreted meaningfully (Hair et al., 2010). Once the EFA results had been closely examined, employee motivation retained all four subscales.

**Table 1:** Internal consistency reliability of the WPI (n = 341)

WPI Subscale	Number of items	Alpha score	Inter-item mean score
Intrinsic motivation (IM): Challenge	7	0.66	0.27
Enjoyment	8	0.80	0.34
Extrinsic motivation (EM): Outward	10	0.79	0.27
Compensation	5	0.68	0.30
Total WPI scale	30	0.77	

Internal consistency coefficients for WPI ranged from 0.66 to 0.80 (high) for the total sample (n = 341). The total WPI scale obtained a Cronbach alpha coefficient of 0.77 (high), which could be considered adequate for the purpose of the current study (Hair et al., 2006). The inter-item correlation mean score for the variables was between 0.27 and 0.34, suggesting that they were within the suggested threshold (Cohen & Swerdlik, 2005). Overall, for the purpose of this paper, the psychometric properties of the WPI were regarded as acceptable as per previous research conducted by Abuhamdeh and Csikszentmihalyi (2009).

Once the subscales of construct employee motivation had been identified in EFA, the data revealed valid and reliable factor ready for the next step in the data analysis, namely CFA. The aim of conducting CFA was to test whether the measure of the construct is consistent with the researchers' understanding of the nature of the construct employee motivation. The first default model for employee motivation is presented in figure 1, followed by the model fit statistics as well as an assessment of the validity and reliability (see tables 2 and 3 respectively).



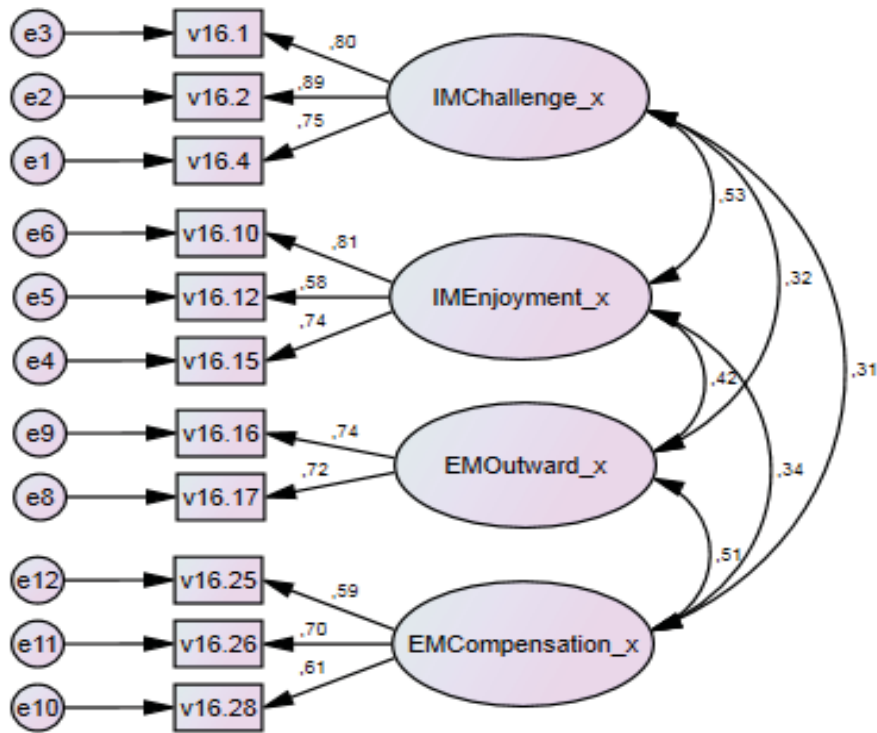


Figure 1: Baseline model for employee motivation (WPI)

Table 2: Model fit for baseline model for employee motivation (WPI)

	CMIN/DF	GFI	AGFI	CFI	RMSEA	PCLOSE
Baseline model	1.58	0.97	0.95	0.98	0.04	0.76

The initial baseline model (as shown in figure 1) presented a good fit with the following fit statistics reported in table 2: All the statistics were in line with the prescribed threshold, as outlined by Hu and Bentler (1999), where CFI > 0.95, CMIN/df < 3, GFI > 0.95, AGFI > 0.80, RMSEA < 0.05 and PCLOSE > 0.05. Since this data should not be viewed in isolation, the validity and reliability of the model were evaluated for each separate dimension, as indicated in table 3 below.

Table 3: Reliability and validity for baseline model of employee motivation (WPI)

	CR	AVE	MSV	ASV
EM_Outward	0.69	0.53	0.26	0.18
IM_Challenge	0.86	0.67	0.29	0.16
IM_Enjoyment	0.76	0.52	0.29	0.19
EM_Compensation	0.67	0.41	0.29	0.16

Table 3 reports a number of reliability and validity statistics for the reported model. While the reliability (CR) for EM\_Outward and EM\_Compensation was less than the recommended threshold of 0.70 (Hair et al., 2010), it was evaluated as only marginal and the constructs were retained. However, convergent reliability (AVE) for EM\_Compensation was significantly lower than the recommended 0.50 prescribed by Hair et al. (2010) and was thus removed from the model.

The discriminant validity (MSV and ASV) for all the construct fell within the recommended threshold, where MSV < AVE and ASV < AVE (Hair et al., 2010). The validity, reliability and fit statistics were recalculated to confirm a good fit of the model following the modifications indicated in figure 2.

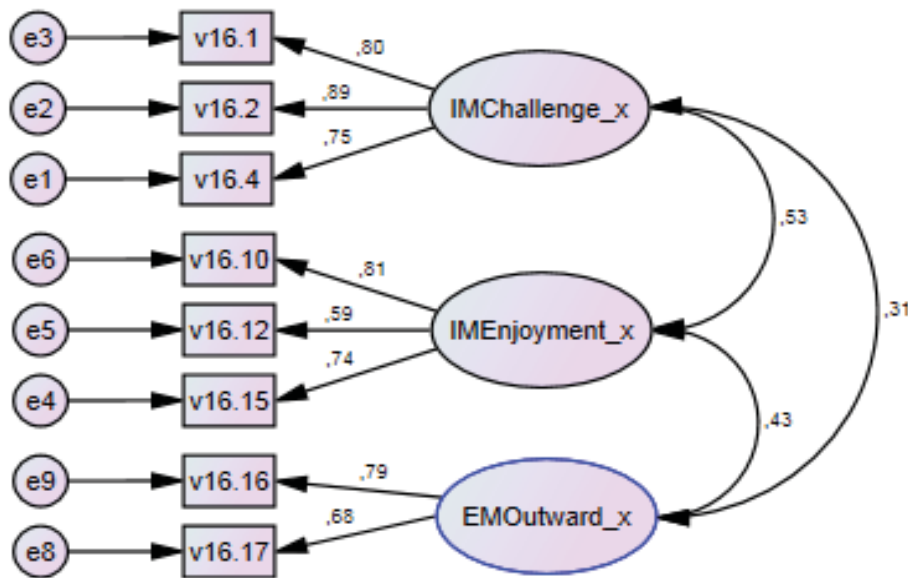


Figure 2: Final model for employee motivation (WPI)

Table 4: Final model fit for employee motivation (WPI)

	CMIN/DF	GFI	AGFI	CFI	RMSEA	PCLOSE
Modified model	2.28	0.97	0.94	0.98	0.06	0.21

The model presented in figure 2, following the removal of EM\_Compensation dimension, reveals similar good fit, reliability and validity statistics compared to the first default model of employee motivation. All the scores were in line with the prescribed threshold as outlined by Hu and Bentler (1999), where CFI > 0.95, CMIN/df < 3, GFI > 0.95, AGFI > 0.80 and PCLOSE > 0.05. RMSEA is above the 0.05, but considered only marginal as per table 4. Since this model data should not be viewed in isolation, the validity and reliability of the model were evaluated, as indicated in table 5.

Table 5: Reliability and validity for the final model of employee motivation (WPI)

	CR	AVE	MSV	ASV
IM_Enjoyment	.76	.53	.29	.23
IM_Challenge	.86	.67	.29	.19
EM_Outward	.69	.54	.18	.14

EM\_Outward was only marginal under the proposed threshold of 0.7 (Hair et al., 2010). Convergent reliability (AVE) for all the constructs fell within the prescribed threshold of 0.5 (Hair et al., 2010). The discriminant validity (MSV and ASV) for all the constructs fell within the recommended threshold, where MSV < AVE and ASV < AVE (Hair et al., 2010). Hence the model did not highlight any reliability or validity issues. Taking into account the good fit results in table 4 and the reliability and validity results in table 5, the modified model, as presented in figure 2, were accepted.

## 6. Conclusion, limitation and recommendations

The main hypothesis of this paper was that a four-factor structure is expected to underlie the employee motivation questionnaire in order to support the four identified theoretical dimensions of the scale. Thus the aim of this paper was to test and validate this hypothesis of the multi-dimensional measurement model of employee motivation. The WPI as a four dimensions' measurement model of employee motivation was subjected to Exploratory Factor Analysis and Confirmatory Factor Analysis. During the CFA phase of the analysis, the dimension compensation was removed from the factor structure because of its poor validity, namely compensation. A three factor measurement model of employee motivation was confirmed; with the three dimensions as enjoyment, challenge and outward behavior. While the factors enjoyment and challenge

had internal consistency scores of above 0.70, the dimension outward behavior measured 0.69. Based on the inferential statistics, the hypothesis of a four-factor structure measurement model of employee motivation was rejected.

Literature seems to support that compensation or reward systems tends to motivate employees' performance (Barber & Bretz, 2000; Grant, 2008; Lawler, 1971, 1990; Vroom 1964). Compensation appears to have the ability to shape culture precisely because of their important influence on communication, motivation, satisfaction and membership. The results of this paper is contrary to the existing literature as it suggests that compensation does not measure employee's extrinsic motivation. Safiullah (2014, p 29) based on a study in a telecommunication organisation states that it is not monetary compensation only that motivates employees, employees tend to be motivated by the content of their jobs. This assertion suggests that employees in this financial organisation seems to perceive their motivation to be related to the enjoyment and challenging nature of their work.

Findings of this paper proposes the use of a three-factor rather than a four-factor employee motivation measurement instrument in a financial organisation. The results of this paper suggests the importance of validating a measurement instrument for different work environments because the underlying construct being measure may have different theoretical structure for the group under investigation. It is evident in this paper that employee motivation appears to be perceived and experienced differently by employees in a financial institution.

It is recommended that for future research this three-factor model of employee motivation be validated empirically in other organisational context.

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# A Model to Select a Leadership Approach for a Diverse Team

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**Abstract:** The modern day workforce is more likely to be diverse and it is imperative for managers to be aware of the influence diversity has on leadership in their organisations. An effective leadership approach should take the diversity of a work team in terms of culture, age, gender, ethnicity and other factors into account. Although there are studies on the effect of national cultures on leadership and decision-making, many modern organisations employ an international workforce. This paper presents research on a methodology to build a decision model to support the selection of an appropriate leadership approach for a diverse team based on the composition of the team. The method to build such a decision model is based on Saaty's well-known Analytic Hierarchy Process (AHP) (Saaty J. , 1990) for solving multi-criteria decision problems. AHP allows an optimal trade-off among the criteria based on the judgments of experts in the problem area. In this paper, AHP is extended to incorporate a diversity profile of the team into the decision problem. Although there are many studies on effective leadership styles, there is very limited research on the selection of an effective leadership style for a specific team. The focus of this research is on a methodology to construct a decision model for this problem and not on the social science of diversity and its influence on employees and leaders. An example is included to show how this model building methodology can be used in practice. The next phase of this research will be to populate and automate the model based on results from research on diversity and leadership.

**Keywords:** Analytic Hierarchy Process; Diversity; Leadership; Multi-cultural, Multi-criteria

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## 1. Introduction

The increase in the number of international business collaborations and the mobility of the modern workforce are bringing people from distinct cultures and backgrounds together, resulting in a diverse workforce. This environment makes it challenging for leaders to implement the most effective leadership approach for a diverse group (Shrivastava & Hinkes, 2016) and hence the need to be more concerned about leading and managing diversity in organisations (Shaban, 2016). Organisations need leaders who understand the complexities of the rapidly changing global environment and how to lead a diverse group of people of different ages, genders, ethnicity, culture and nationalities (Nanjundeswaraswamy & Swamy, 2014). A long-term, multi-phase research project on leadership and organisational behaviour, the GLOBE (Global Leadership and Organization Behavior Effectiveness) Research Program, was launched in 1991 by Robert House of the Wharton School of Business; this program delivered comprehensive studies on the topic of culture, leadership and organizational behaviour in 2004, 2007 and 2013 ( (House, Dorfman, Javisan, Hanges, Sull e Luque, & Gupta, 2013) (House, Hanges, Javidan, Dorfman, & Gupta, 2004) (Chhokar, Brodbeck, & House, 2007)). Results of the GLOBE studies show that leader effectiveness is contextual; it is embedded in the norms, values and beliefs of the people being led. Given the unique composition of diverse teams, how does a manager know which leadership and decision-making approach will best suit his or her team?

Even though there is vast literature on leadership styles and diversity, there is very little research on creating mathematical support model in this field. This paper presents a methology to build a model that will support a manager in aligning his leadership style with an approach that is best suited to his team. The model is based on the well-known multi-criteria decision making approach for complex decision problems, the Analytic Hierarchy Process (AHP) introduced by Saaty in the 1980s ( (2008) (1994)). The AHP evaluates a number of alternative approaches in terms of a number of criteria. It relies on input data from experts or role players in the problem domain and is thus easy to obtain (Triantaphyllou & Mann, 1995). It is a Mixed Methods technique that contains both qualitative and quantitative aspects. AHP has been used in many applications such as information technology vendor and product evaluation (Saaty T. , 2003), manufacturing (Putrus, 1990), and financial decision-making (Boucher & McStravic, 1991). Thaerdoost (2018) describes AHP as one of the most

inclusive systems considered to make decisions with multiple criteria. Saha et al. (2018) used AHP to select the best start-up business in Business to Consumer type e-businesses. These authors state that they selected AHP amongst other multi-criteria methods because AHP aids the decision maker with setting priorities in order to make the best decision.

In our proposed methodology, experts on leadership must delineate a number of appropriate different Leadership Approaches (LAs) based on a set of selected criteria (leadership style dimensions). AHP will be used to rank the importance of the described LAs in terms of the selected criteria, and we extend the classical AHP technique to incorporate a diversity profile of the specific team into the decision problem. The diversity profile of the team describes the team's composition in terms of diversity characteristics such as race, gender, age, culture, religion, etc. The descriptions of appropriate leadership approaches and the selection of appropriate criteria and diversity characteristics require additional research.

Section 1.1 provides an overview of leadership and diversity and Section 1.2 gives an overview of AHP. Section 2 presents the proposed methodology to construct a diversity-based decision model for selecting an appropriate LA for a specific work team. Section 3 illustrates the use of the model with an example.

### **1.1 Overview of Leadership and Diversity**

A definition of workforce diversity is a complex phenomenon with various intricacies in interpretation. "Workplace diversity refers to the variety of differences among people in an organization. Diversity could be related to factors including: age, gender, culture, education, employee status, physical appearance, family status, regional origin, national origin, thinking style, religion, race, and more" (Agrawal, 2012) as cited in (Shaban, 2016), p.77). Lane and Beamish (1990) argue that many of the problems in the workplace are products of cultural and behavioural factors triggered by inadequate understanding of and training in cross-cultural cooperate behaviour. A diverse workforce can be both costly and beneficial to an organisation. The benefits of diversity are usually improved innovation, ideas and creativity that employees from distinct social backgrounds bring. On the other hand, if poorly managed, diversity in the workplace can effectively lead to conflicts, miscommunication and higher levels of employee turnover (Shaban, 2016). Research indicates that diverse teams are more prone to engage in conflicts due to their distinct perspectives; they have, however, also been found to perform better because they tend to challenge each other's perceptions which allows them to reach better justified decisions (Wiersema & Bantel, 1992) as cited in (Shaban, 2016), (Williams & O'Reilly, 1998) as cited in (Kochan, 2003)). A diverse workforce may be more likely to improve performance when group members and leaders are trained to deal with group process issues involving communication and problem solving in diverse teams (Kochan, 2003).

Leadership is defined as a "social influence process in which the leader seeks the voluntary participation of subordinates in an effort to reach organisational goals" (Omolayo, 2007) as cited in (Nanjundeswaraswamy & Swamy, 2014)). A team with dissimilar opinions and individuals require a leader who can guide the whole group in a productive and common direction and align the team member's efforts (Shaban, 2016). It is generally accepted that diverse teams perform better but according to Shrivastava and Hinkes (2016) it depends on the way the team is lead and whether the leadership style is appropriate.

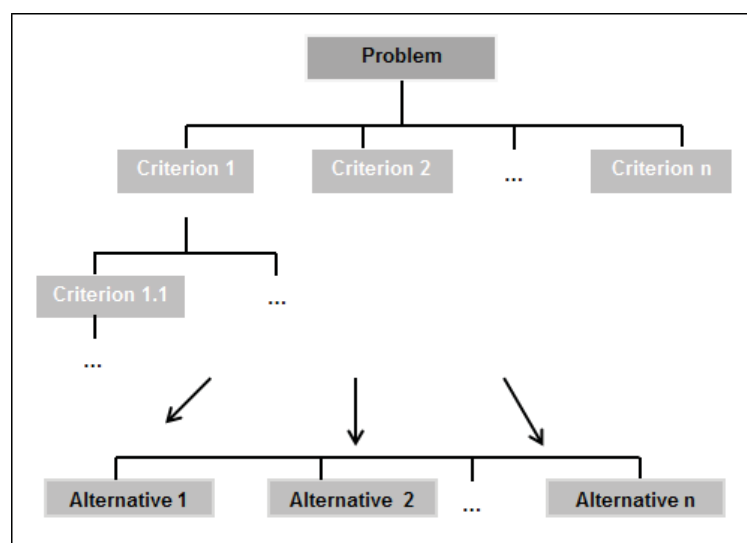
The GLOBE Research Program published comprehensive studies in 2004, 2007 and 2013 (Chhokar, Brodbeck, & House, 2007), (House, Hanges, Javidan, Dorfman, & Gupta, 2004), (House, Dorfman, Javisian, Hanges, Sull e Luque, & Gupta, 2013)) which examined the interrelationships between societal culture, societal effectiveness and organisational leadership. One of their major findings of the 2004 study was that "leader effectiveness is contextual, that is, it is embedded in the societal and organizational norms, values, beliefs of the people being led. GLOBE established nine cultural dimensions to capture differences and similarities in the culture of societies: Power distance, uncertainty avoidance, humane orientation, institutional collectivism, in-group collectivism, assertiveness, future orientation, performance orientation, and gender egalitarianism. These dimensions are based on the findings of earlier researchers such as Hofstede (1984), Schwartz (1994) and others. The GLOBE studies also identified 112 leadership characteristics and 21 leadership scales. The leadership scales were ranked from the "most universally desirable" to the "least universally desirable". The 21 scales were reduced to six scales which resulted in six leadership styles: performance-oriented style, team-oriented style, participative style, humane style, autonomous style, and self-protective style (Hoppe, 2007).

The challenge for leaders in diverse environments is understanding which leadership style will work best for their unique diverse team. Although a national culture is of interest, many organisations have an international workforce; in such teams a leader will need more support to understand which approach will deliver the most effective results.

## 1.2 Overview of AHP

The Analytical Hierarchy Process (AHP) (Saaty J. , 1990) is a technique to resolve decision-making problems with multiple criteria by using hierarchical decomposition. The core of the method is to reduce decision-making problems to a series of pairwise comparisons from which ratio scales are derived which are then synthesised to evaluate alternatives. Bias in a decision making process is reduced and decision makers are allowed use both objective and subjective information.

The AHP method represents a problem as a hierarchical structure that depicts the relationships of the problem (goal), evaluation criteria, sub-objectives, and alternatives (Figure 1), and derives a ranking of the alternatives based on sets of pairwise comparisons that determines the weights of importance of the decision criteria.



**Figure 1:** Decision Hierarchy

The criteria depict what the decision makers have to evaluate in order to reach a decision. The alternatives are the range of decisions or solutions for the problem. The sub-criteria allows finer specification of the criteria.

AHP finds an optimal trade-off among the criteria. A weight is generated for each of the criteria based on pairwise comparisons that results in a score for each of the alternative solutions to the decision problem, with respect to that particular criteria. The criteria weights and alternative scores are combined to give a global score or a ranking for each alternative. The benefit of the AHP is that an expert or group of experts' judgements based on experience guide the computations to calculate the ranking for the alternative solutions.

Saaty (2008) developed the following steps for applying the AHP.

1. Define the problem and determine the goal.
2. Structure the decision hierarchy from the top with the goal of the decision, then the objectives from a broad perspective, through intermediate levels (criteria on which elements depend), to the lowest level (the set of alternatives).
3. The priorities of elements at each level are established by building a set of pair-wise comparison matrices of all the elements with respect to an element on the immediately higher level. The pair-wise comparisons are done in terms of which element dominates the other based on a relative scale of measurement introduced by Saaty (1980) as shown in Table 1.
4. Relative weights (eigenvectors) for the elements compared in the comparison matrices are calculated. This provides a ranking matrix for the elements on each level and is used to calculate the global priorities of the alternatives.

**Table 1:** The Scale of Relative Importance (1980)

Intensity of importance	Definition of comparing element <i>i</i> to element <i>j</i>
1	Equal importance of <i>i</i> and <i>j</i>
3	Slight importance of <i>i</i> above <i>j</i>
5	Strong importance of <i>i</i> above <i>j</i>
7	Very strong importance
9	Absolute importance of <i>i</i> above <i>j</i>
2,4,6,8	Intermediate values between the two adjacent judgments
Reciprocals	If <i>i</i> is deemed to be <i>k</i> times more important than <i>j</i> , then <i>j</i> is assigned 1/ <i>k</i> compared to <i>i</i>
Rationals	If consistency is forced, i.e. when measured values are available

The AHP methodology allows for slight non-consistent pairwise comparisons. A consistency ratio is calculated to monitor and should be less than 10% (1980).

## 2. Proposed Methodology to build a Diversity-based Leadership Model

This paper addresses the problem to select the most appropriate LA for a specific work team. It describes a methodology to build a model for selecting an appropriate leadership approach based on input provided by experts on leadership and diversity as well as input on the team. The experts describe a number of different LAs based on a set of selected criteria (leadership style dimensions). AHP is used to rank the importance of the described LAs in terms of the selected criteria. Our methodology extends AHP to incorporate the diversity profile of the team in the ranking process. The diversity profile reflects the composition of the team on the basis of characteristics such as age, race, religion, gender, etc. This profile serves as input to the model and these characteristics will be mapped to the selected LA criteria.

The process of building a leadership decision model consists of:

- Step 1: Experts on leadership and diversity *identify LA criteria* (e.g. power distance) and *describe a number of different LAs* based on the criteria.
- Step 2: The experts decide on suitable *characteristics to describe a team's diversity profile* (for example, race).
- Step 3: A pairwise comparison matrix is built for each of the criteria (by the expert group); in each matrix the *LAs are ranked in terms of importance based on the specific criterion* under consideration. Saaty's scale of relative importance is used to measure the comparisons.
- Step 4: This step and step 5 is an extension of AHP; a specific team's preferences are incorporated into the eventual ranking of the LAs:
  1. The team manager provides the profile of the team under consideration.
  2. A comparison matrix is built to rank the different profile characteristics (selected in step 2) in terms of importance.
- Step 5: A pairwise comparison matrix is built for each profile characteristic (by the expert group); the matrix *compares the importance of the different criteria based on the specific profile characteristic* under consideration. This step is performed for each of the characteristics.
- Step 6: Calculations are performed to determine *a ranking of the different LAs based on the team's profile*.

The output is a (the highest ranked) LA that best suits the client's team. Steps 1 to 3 and 5 are done once only by the expert group. This creates the model. Steps 4 and 6 are done for each team under consideration. These steps are performed to use the model to indicate which of the LAs are most suited for a specific team.

Each step is now described in greater detail below and Figure 2 illustrates the process.

### 2.1.1 Step 1: Formulating the Decision Making Hierarchy

Experts decide on the most appropriate decision criteria on which to compare LAs. ~ (The diversity and leadership dimensions by the GLOBE studies' can be used.) Assume *k* criteria, *C*<sub>1</sub>, *C*<sub>2</sub>, ..., *C*<sub>*k*</sub>, are selected.



Experts describe  $n$  LA approaches namely,  $LA_1, LA_2, \dots, LA_n$ ; these approaches are the alternatives in the AHP model. The LA descriptions are based on the knowledge of the experts and sources in the literature, and this step is only performed once. Each approach's description will be based on the selected criteria.

2.1.2 Step 2: Identify the Profile Characteristics of a Team

The experts decide on  $s$  suitable characteristics,  $P_1, P_2, \dots, P_s$ , to describe a team's profile, for example, the team's composition in terms of race, gender, age, religion, etc. Each profile characteristic has different sub-categories, for example if  $P_1 = \text{Race}$ , its sub-categories can be African, White, Asian and Biracial ( $P_{1a}, P_{1b}, P_{1c}$  and  $P_{1d}$ , respectively). A characteristic  $i$ 's sub-categories (for  $i=1, \dots, s$ ) will be called  $P_{ia}, P_{ib}, \dots, P_{i-SUBi}$ .

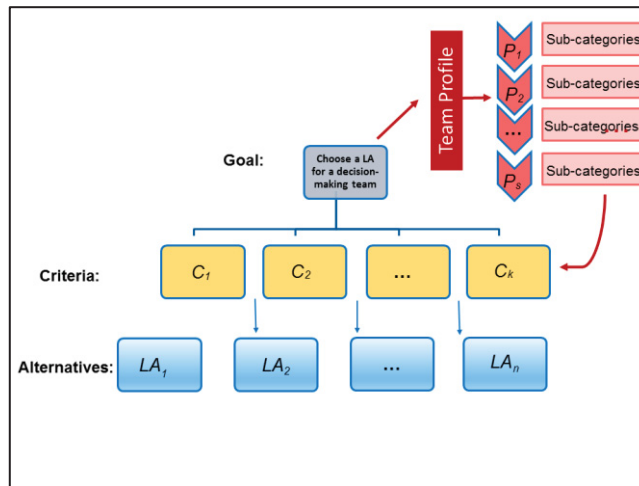


Figure 2: The Decision Hierarchy and Variable Names

2.1.3 Step 3: Comparison of LAs w.r.t. Criteria

A pairwise comparison matrix is built for each of the decision criteria to compare the different LAs in terms of importance based on the specific criterion under consideration. A ranking of the LAs in terms of each criterion will be calculated from the comparison matrix. The relative ranking of the LAs,  $LA_1, LA_2, \dots, LA_n$ , in terms of criterion  $C_j$  is called  $R_{C_j\_LA_1}, R_{C_j\_LA_2}, \dots, R_{C_j\_LA_n}$ . Note that  $R_{C_i\_LA_j}$  represents the ranking of  $LA_j$  w.r.t. criteria  $C_i$ . For example, if  $C_1 = \text{power distance (PD)}$ , then  $R_{C_1\_LA_1}, R_{C_1\_LA_2}, \dots, R_{C_1\_LA_n}$  gives the relative ranking of the LA approaches in terms of the importance of a high PD value.

2.1.4 Step 4: Gather Team's Composition According to the Profile Characteristics and Rank the Characteristics

The manager provides a description of the team in terms of the profile characteristics identified in Step 2. For example, the composition of the team in terms of  $P_1 = \text{Race}$  will be given as the percentage of team members belonging to each of the sub-categories of Race. Similar information has to be supplied for all the profile characteristics and will be represented as the vectors:  $\text{Per}P_1, \text{Per}P_2, \dots, \text{Per}P_s$ .

A comparison matrix will be built to determine the relative importance of the different profile characteristics for the team based on the judgment of the manager supported by the experts. These rankings are named  $R_P = [R_{P_1}, R_{P_2}, \dots, R_{P_s}]$ .

2.1.5 Step 5: Comparison of Criteria w.r.t. Profile Characteristics

Pairwise comparison matrices of the criteria w.r.t. each of the profile characteristics are done. This step is an enhancement of the AHP because we need to incorporate the influence the team's profile on the eventual LA ranking; for each sub-category of each profile characteristic, a comparison matrix is constructed w.r.t. the criteria; the different criteria will be ranked in terms of each of the different profile characteristics. The comparison matrices for the sub-categories of a profile characteristic are combined via a weighted formula to give a team ranking of the criteria for that particular characteristic.

Let  $R_{P_j\_C_i}$  represent the ranking of criterion  $C_j$  w.r.t profile characteristic  $i$ 's subcategory  $a$ . For example, if  $P_1 = \text{Race}$  and has four sub-categories then four comparison matrices are constructed. To get a ranking of the

criteria's importance w.r.t. the first sub-category of Race (sub-category a of P1), construct one comparison matrix. Calculations produce the ranking vector:  $R\_P1\_C = [R\_P1a\_C1, R\_P1a\_C2, R\_P1a\_C3, R\_P1a\_C4]$ .

Similar calculations are performed for each sub-category of a characteristic. Now we combine the sub-category comparison matrices of a profile characteristic  $i$  in order to calculate the ranking of the criteria w.r.t. this characteristic (the vector  $Weighted\_R\_Pi\_C$ ). This is done through a weighted formula where the weights are the team composition percentages (see Step 4),  $PerPi$ . We thus use the composition of the team to rank the relative importance of the criteria for each of the profile characteristics.

$$Weighted\_R\_Pi\_C = PerPi * R\_Pi\_C \quad \text{for } i = 1, \dots, s$$

#### *2.1.6 Step 6: Calculating the Global Ranking of LAs*

Finally, we want to calculate the global (or overall) ranking of the LAs w.r.t the relative importance assigned to the criteria according to the team's profile (matrix with weighted rankings from step 5). To calculate the global ranking of the criteria, we multiply the matrix containing the ranking of the criteria w.r.t the team's profile with the vector containing the ranking of the profile characteristics ( $R\_P$ ) in order of importance for this team (from step 4). This gives a ranking of the criteria for the team under consideration,  $Global\_R\_C$ . The next step is to calculate the global ranking of the LAs: the ranking of the LAs w.r.t. the criteria (done in step 3) has to be weighted according to the global ranking of the criteria (according to the team's profile). This vector gives the global ranking for the LAs.

$$Global\_R\_LA = R\_C\_LA * Global\_R\_CT$$

### **3. Example**

The technique to build a model is illustrated by a trivial example.

Important note: The input data and assigned values in this example were chosen for the purpose of illustration of the methodology only. All pairwise comparisons, judgments, associations and rankings used in this example are made up for the purpose of illustration; the values bear no relation to reality or fact. Thorough research and interpretation of results on diversity, especially culture, is required in order to build and verify a model.

#### *3.1.1 Step 1: Formulating the decision hierarchy*

In this example, the following four of the nine cultural dimensions identified in the GLOBE study (Hoppe, 2007) are selected as the decision criteria ( $k=4$ ):

- C1 = Power Distance (PD)
- C2 = Assertiveness (Ass)
- C3 = Uncertainty Avoidance (UA)
- C4 = Collectivism (Col).

These criteria represent an indication of a high score for that particular dimension. For example, if an alternative has a favourable pairwise comparison for PD over Col, then it can be interpreted that that alternative is aligned with a high PD score and a lower score for Col.

Superficial descriptions for three LA styles serves as the alternatives ( $n=3$ ):

LA1 = Inspirational Approach    LA2 = Negotiated Approach    LA3 = Casual Approach.

In the inspirational LA, a leader motivates the team by inspiring them, offering challenges, and encourages individuals. A collective purpose is assumed. In a negotiated LA, leader motivates by offering benefits a team will receive if they accomplish agreed-upon outcomes, and he builds relationships with the team members.

Casual leaders abdicate their responsibility and avoid making decisions; team members are expected to solve problems on their own.

The LAs have to be mapped to the selected criteria. For the purpose of this example, the inspirational LA is associated with high levels of power distance and collectivism, and low levels of assertiveness and uncertainty

avoidance; the negotiated LA with a lower level of power distance and individualism and assertiveness, and a low level uncertainty avoidance; and the casual LA with a low level of uncertainty avoidance and power distance and collectivism, and a low level of assertiveness

3.1.2 Step 2: Identify the Profile Characteristics of a Team

The selected criteria are (s=3):

P1 = Race with sub1 = d, P1a = African, P1b = White, P1c = Asian, and P1d = Biracial;  
 P2 = Age with sub2 = d, P2a = <25, P2b = 25-34, P2c = 35-49, P2d = >= 50; an  
 P3 = Gender with sub3 = b, P3a = Male and P3b = Female.

3.1.3 Step 3: Comparison of LAs w.r.t. Criteria

Experts have to complete the pairwise comparison matrices of the three alternatives (LAs) for w.r.t. each of the four criteria. The matrix below shows the pair-wise comparison of the LAs in terms of a high score for Power Distance. In LA<sub>1</sub> a high level of PD is four times as important as in LA<sub>2</sub> and seven times as important as in LA<sub>3</sub>. In LA<sub>2</sub> a high level of PD is five times as important as it is in LA<sub>3</sub>.

Table 2: Comparison of LAs w.r.t. the PD Criterion

C <sub>1</sub> = PD	LA <sub>1</sub>	LA <sub>2</sub>	LA <sub>3</sub>
LA <sub>1</sub>	1	4	7
LA <sub>2</sub>	1/4	1	5
LA <sub>3</sub>	1/7	1/5	1

The next step is to calculate the relative ranking of the styles in terms of importance of a high PD in a LA. From the normalised eigenvector values shown in Table 3: LA1 has a priority of 68.7% w.r.t a high PD value, LA2 has a priority of 24.4% and in LA3, PD rates very low at 7%. Similar calculations are done for the remaining three criteria. Table 4 shows a summary of the ranking of the LAs w.r.t. the criteria.

Table 3: Ranking of LAs w.r.t. the Power Distance Criterion

C <sub>1</sub> = PD	LA <sub>1</sub>	LA <sub>2</sub>	LA <sub>3</sub>	Eigenvector	Normalised Eigenvector (R <sub>C<sub>1</sub>LA</sub> )
LA <sub>1</sub>	1	4	7	0.938	R <sub>C<sub>1</sub>LA<sub>1</sub></sub> = 0.687
LA <sub>2</sub>	1/4	1	5	0.333	R <sub>C<sub>1</sub>LA<sub>2</sub></sub> = 0.244
LA <sub>3</sub>	1/7	1/5	1	0.095	R <sub>C<sub>1</sub>LA<sub>3</sub></sub> = 0.070

Table 4: Rankings of LAs w.r.t the Criteria

	PD (R <sub>C<sub>1</sub>LA</sub> )	Ass (R <sub>C<sub>1</sub>LA</sub> )	UA (R <sub>C<sub>1</sub>LA</sub> )	Col (R <sub>C<sub>1</sub>LA</sub> )
LA <sub>1</sub>	0.678	0.089	0.167	0.785
LA <sub>2</sub>	0.244	0.157	0.761	0.263
LA <sub>3</sub>	0.070	0.767	0.073	0.659

3.1.4 Step 4: Gather Team's Composition and Rank the Characteristics

Table 5: Racial Composition of the Team

P <sub>1</sub>	Percentage (Per <sub>1</sub> )
P <sub>1a</sub> (African)	PerP <sub>1a</sub> = 50%
P <sub>1b</sub> (White)	PerP <sub>1b</sub> = 20%
P <sub>1c</sub> (Asian)	PerP <sub>1c</sub> = 10%
P <sub>1d</sub> (Biracial)	PerP <sub>1d</sub> = 20%

Table 6: Age composition of the Team

P <sub>2</sub>	Percentage (Per <sub>2</sub> )
P <sub>2a</sub> (<25)	PerP <sub>2a</sub> = 20%
P <sub>2b</sub> (25-34)	PerP <sub>2b</sub> = 40%
P <sub>2c</sub> (35-49)	PerP <sub>2c</sub> = 30%
P <sub>2d</sub> (>=50)	PerP <sub>2d</sub> = 10%

Table 7: Gender Composition of the Team

P <sub>3</sub>	Percentage (Per <sub>3</sub> )
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$P_{3a}$ (Male)	$Per_{P_{3a}} = 55\%$
$P_{3b}$ (Female)	$Per_{P_{3b}} = 45\%$

A ranking of the profile characteristics in terms of their relative importance in the team is done. In our example, Race is regarded to have a much greater influence on the team under consideration than Age or Gender (Table 8).

**Table 8:** Ranking of Profile Characteristics w.r.t. the Team

Characteristics	$P_1$ (Race)	$P_2$ (Age)	$P_3$ (Gender)	Ranking ( $R_P$ )
$P_1$ (Race)	1	5	2	0.581
$P_2$ (Age)	1/5	1	1/3	0.109
$P_3$ (Gender)	1/2	3	1	0.309

3.1.5 Step 5: Comparison of Criteria w.r.t. Profile Characteristics

A pairwise criteria comparison matrix for each profile sub-characteristic is completed. The comparison matrix and ranking for the African sub-category of Race is shown in Table 9, and Table 10 shows the rankings for all the sub-categories of Race. Tables 11 and 12 show the rankings of the criteria w.r.t. Age and Gender, respectively.

**Table 9:** Ranking of Criteria w.r.t. the African Sub-category of Race

African Race- $P_{1a}$	$C_1$ PD	$C_2$ Ass	$C_3$ UA	$C_4$ Col	Ranking $R_{P_{1a}_C}$
$C_1$ (PD)	1	6	9	9	$R_{P_{1a}_C_1} = 0.705$
$C_2$ (Ass)	1/6	1	3	3	$R_{P_{1a}_C_2} = 0.166$
$C_3$ (UA)	1/9	1/3	1	1	$R_{P_{1a}_C_3} = 0.065$
$C_4$ (Col)	1/9	1/3	1	1	$R_{P_{1a}_C_4} = 0.065$

**Table 10:** Rankings of Criteria w.r.t. the Sub-categories of Race

Race: $R_{P_1_C}$	African $R_{P_{1a}_C}$	White $R_{P_{1b}_C}$	Asian $R_{P_{1c}_C}$	Biracial $R_{P_{1d}_C}$
$C_1$ (PD)	0.705	0.300	0.280	0.400
$C_2$ (Ass)	0.166	0.250	0.270	0.200
$C_3$ (UA)	0.065	0.200	0.350	0.201
$C_4$ (Col)	0.065	0.250	0.100	0.199

**Table 11:** Rankings of Criteria w.r.t. the Sub-categories of Age

Age: $R_{P_2_C}$	<25 $R_{P_{2a}_C}$	25-34 $R_{P_{2b}_C}$	35-49 $R_{P_{2c}_C}$	>=50 $R_{P_{2d}_C}$
$C_1$ (PD)	0.044	0.100	0.200	0.230
$C_2$ (Ass)	0.101	0.220	0.140	0.220
$C_3$ (UA)	0.191	0.280	0.270	0.222
$C_4$ (Col)	0.664	0.400	0.390	0.328

**Table 12:** Rankings of Criteria w.r.t. the Sub-categories of Gender

Gender: $R_{P_3_C}$	Male $R_{P_{3a}_C}$	Female $R_{P_{3b}_C}$
$C_1$ (PD)	0.190	0.200
$C_2$ (Ass)	0.220	0.070
$C_3$ (UA)	0.290	0.380
$C_4$ (Col)	0.300	0.350

The weighted ranking (percentages are the weights) of the criteria w.r.t. each of the four team profile characteristics (Weighted\_ $R_P_C$ ) has to be calculated. The calculations for Race ( $P_1$ ) are shown below. Table 10 shows the rankings of the criteria w.r.t. each of the four sub-categories of Race. The results in this table is multiplied by weights that represents the percentage of members of each race ( $Per_{P_1}$ ), to get an overall ranking of the decision criteria for the team based on Race.

$$\text{Weighted\_R\_P1\_C} = \text{Per}_{P_1} * R_{P_1_C} = [0.521 \ 0.200 \ 0.143 \ 0.133]$$

From the calculations PD outranks the other criteria by far according to Race. The second highest ranked criterion is Assertiveness. Figure 13 summarises for all the characteristics (Race, Age and Gender).

**Table 13:** Team’s Ranking of Each Criteria w.r.t. Team’s Composition

Weighted_ $R_P_C$	Race Weighted_ $R_{P_1_C}$	Age Weighted_ $R_{P_2_C}$	Gender Weighted_ $R_{P_3_C}$
$C_1$ (PD)	0.521	0.132	0.189

$C_2$ (Ass)	0.200	0.180	0.153
$C_3$ (UA)	0.143	0.253	0.331
$C_4$ (Col)	0.133	0.443	0.323

3.1.6 Step 6: Calculating Global Ranking of LAs

The global ranking of the criteria w.r.t. to team profile is now calculated; the ranking of the criteria w.r.t. each of the profile characteristic based on the team’s composition (matrix in Table 13) is multiplied with the ranking of the profile characteristics based on their relative importance for this team (vector in Table 8). For example, because Race outranks Age and Gender significantly, the rankings that the team gave to the decision criteria according to Race, is given a much larger weight.

$$\text{Global\_R\_C} = \text{Weighted\_R\_P\_C} * \text{R\_P} = \begin{bmatrix} 0.521 & 0.132 & 0.189 \\ 0.200 & 0.180 & 0.153 \\ 0.143 & 0.253 & 0.331 \\ 0.133 & 0.443 & 0.323 \end{bmatrix} * \begin{bmatrix} 0.581 \\ 0.109 \\ 0.309 \end{bmatrix} = \begin{bmatrix} 0.375 \\ 0.103 \\ 0.213 \\ 0.225 \end{bmatrix}$$

The results are summarised in Table 14. The team thus regards a high PD to be the most important criteria followed by a high level of Collectivism and then low Uncertainty avoidance and in the last place, Assertiveness.

**Table 14:** Team’s Global Ranking of Criteria

Global_R_C	Ranking	Order of preference
$C_1$ (PD)	0.375	1
$C_2$ (Ass)	0.103	4
$C_3$ (UA)	0.213	3
$C_4$ (Col)	0.225	2

The final step is to calculate which of the LA approaches is a best match for team’s preferences; the comparison matrices of the different LAs w.r.t. criteria (R\_C\_LA in Table 4) by the team’s ranking for the criteria (Global\_R\_C in Table 14):

$$\text{Global\_R\_LA} = \text{R\_C\_LA} * \text{Global\_R\_CT} = \begin{bmatrix} 0.678 & 0.089 & 0.167 & 0.785 \\ 0.244 & 0.157 & 0.761 & 0.263 \\ 0.070 & 0.767 & 0.073 & 0.659 \end{bmatrix} * \begin{bmatrix} 0.375 \\ 0.103 \\ 0.213 \\ 0.225 \end{bmatrix} = \begin{bmatrix} 0.476 \\ 0.329 \\ 0.269 \end{bmatrix}$$

LA1 is thus the most appropriate approach for this team: a large power distance, low levels of assertiveness and uncertainty avoidance and a very high preference for collectivism.

**Table 15:** Global Ranking of LAs for Team

LAs	Global_R_LA	Order of preference
LA <sub>1</sub>	0.476	1
LA <sub>2</sub>	0.329	2
LA <sub>3</sub>	0.269	3

**4. Conclusion**

It is difficult to measure how diversity affects a team in terms of its response to leadership style. In this paper, the authors show how a manager can be guided in selecting an appropriate leadership approach for a specific team by building a model based on an extension of AHP. In this technique, criteria for the selection of a LA is synthesised according to a diversity profile of the team under consideration.

The next phase in this research will focus on the application of this model on a South African instance. The population of South Africa is one of the most complex and diverse in the world; it is commonly known as the Rainbow Nation, a title that captures the country's cultural and ethnic diversity. This type of model should be useful to South African organisations to support effective leadership. Further research is required to populate and verify the model.

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# Postgraduate Research Supervision Pedagogic Methods: A Critical Review for South Africa

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**Abstract:** In the South African context of university educational research, the real question involves postgraduate research supervision process as a continuation of teaching research methodology. This paper is located in reviewing literature on business and management educational research areas for rarely addressing this question. The research assumption was that at postgraduate level research supervision continues teaching research methodology. The aim analyse literature covering educational researches to conclude that postgraduate research supervision extends teaching research practices for business and management studies in the South African context. Therefore, how does literature address postgraduate research supervision and research method teaching pedagogic and practice issues? In other words, to what extent do scholarly views inform the business and management postgraduate research supervision process as teaching research method continuum. The research setting was selecting journal articles dealing with educational research and research supervision to fit the selected ECRM19 conference topic: 'Research supervision', and for the Electronic Journal of Business Research Methods. A qualitative design paper that analysed researched articles. An exploratory basic content analysis method was applied. A computer-assisted data analysis software called Nvivo was used to compute Pareto technique which generated research results and findings. This study established some trends in postgraduate research supervision and teaching research methods pedagogies and practices. However, in South Africa business and management educational researches rarely pursue these trends. This paper therefore infer postgraduate supervision pedagogies and practices fit the contention about teaching of research methods continuum. Contributing is made in the educational research raising questions regarding research supervision as continuation of teaching research methods. Future attention in postgraduate business and management educational research is triggered. This regards improving both the quality of postgraduate research supervision and teaching productivity and quality postgraduate research projects.

**Keywords:** Teaching research methods, supervision practice, supervision pedagogy

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## 1. Introduction

In South Africa, skilling university postgraduate research supervisors and candidates draws a surmountable attention in global educational research development. This paper is located within ongoing educational research development debates. Contentions vail on this global knowledge economy that not all university postgraduate supervisors apply the same supervision methods and elements even though they may belong to similar pedagogical scenarios of supervising postgraduate students (Pearson and Brew, 2002; Manathunga, 2005). This background debate amplifies the question, how are postgraduate supervision methods and practices an extension of teaching research methodology. A speculation exists that effective university research supervisors use different vocabularies for different researching strategies or methods. Thus, within the South African university context of business and management research curricula lack theorisation of continuation of teaching research methods in postgraduate research supervision. Critical thinkers in this discipline are yet to embark on such an archetypical view. Supervising postgraduate research as new to the global educational development scenarios, which is the reason for different use of vocabularies in practice and pedagogies. The general solution, for many universities and graduate schools, emphasising educational development for supervisors to inculcate effectiveness, efficiency and ethical practices. Scholars were expected to be responsible for postgraduate students' development. This challenged universities and graduate schools to keep changing postgraduate research supervision programs. Based on established background debates surrounding educational research it is justifiable to deal with postgraduate supervision as continuing teaching research methods. This paper addresses this issue starting by describing the context and the subject of research supervision as part of educational research development discourses. It then explores postgraduate research supervision a continuation of teaching research methodology, and then describes the adopted methodology. Discussion of findings achieve the link between postgraduate supervision process and teaching research methods practice.

## 2. The context

Locating this paper in the university educational research setting required focusing on the relationship between postgraduate research supervision and teaching research methods. Largely, postgraduate curricula

contexts require that students attain research skills and writing competencies from teaching and instructions. According to McCallin and Nayar (2012, p.64) “The debate has moved into the supervision pedagogy and recognising research teaching as a sophisticated skill”. Debates demand cultured educational response from institutions, academics and the students respectively to achieve the research supervision and teaching pedagogy settings (Lee and Murray, 2015). Zuber-Skerritt and Roche (2004) develop discussion on “a new constructivist model of knowledge development”. Buttery, Richter, Filho, (2005) explicate on “the group supervision model in postgraduate training”. Manathunga (2007) spells out on the “policy documents on postgraduate supervision that positions mentoring as the most effective supervision strategy”. Badley (2014) argues for “pragmatism as a useful way for supervisors to help their research students become effective research writers”. These scholarly views and discussions place the question about university postgraduate research supervision in context of teaching pedagogies and practices. Exploring postgraduate research supervision as an extension of teaching research methods is within the educational research setting.

### 3. Research supervision as educational development

Educational development scholars establish that university research supervision enhances teaching and learning for undergraduate and postgraduate candidates. Pearson and Brew (2002) observe, “concerns to improve the effectiveness and efficiency of research supervision are leading to the introduction and extension of programmes for supervisor development.” The quest to train supervisors was triggered by the need for success, usefulness and productivity in postgraduate research supervision and teaching and has grown widely.

Moreover, educational development is concerned with the quality of supervisors and their performance to ensure the productiveness of their supervisees. Pearson and Brew (2002), therefore, propose a view about understanding and outlining the roles and functions as “what supervisors do and why”. This view considers research supervising an educative process that gives postgraduate research candidates effective learning (Pearson and Brew, 2002).

However, educational development, in particular research supervisor training, is a suspect. Manathunga (2005) posits, “educational development can be problematic for research supervisors”. A recurring challenge here is that academics interpret and intercept educational development as administrative. Proponents shifted the focus to “attempting to provide technical ‘fixes’ that deny the genuine difficulties and complexities involved in supervision relationships” (Manathunga, 2005). Meaning, emphasis was on the administrative function of supervision rather than educational developer roles and responsibilities. As a result, for many academics research supervision programs became elective, or optional, courses because it appeared “as a private pedagogical space” (Manathunga, 2005). Many postgraduate supervisors did not accept educational development process with grace because they perceived it as facilitating the satisfaction of “quality assurance agendas of governments and university administrators” (Manathunga, 2005). As an alternative to this suspicion, Manathunga (2005) posits “the ‘Compassionate Rigour’ supervision program, [is] developed to address these difficulties, [and] manages to respond respectfully and sensitively to supervisors’ educational development needs.” Thus, educational development is shifting more towards approaches and discourses that address challenges of beyond administrative function of supervision.

### 4. Challenges

Difficulties are not only with the educational development of supervisors only. Scholars establish a link between funding and the delivering of quality postgraduate research supervision. According to McCallin and Nayar (2012) “changes in the funding and delivery of research programmes at the university level have, in recent years, resulted in significant changes to research supervision”. Thus, university research funding has major effects on the supply of postgraduate research supervision because of the lack in subsidised research supervision, research curricula, and students’ research projects. Given this challenge, postgraduate students suffer the consequences. McCallin and Nayar (2012) in their study in a New Zealand context identify and discuss four areas impacted by research funding namely “the research context, faculty issues, supervision pedagogy and models of supervision”. Research subsidies and funding are central in support of postgraduate supervision process, strategies and pedagogies and, students’ field research and thesis writing. Increased scope of supervisor duties and loads of candidates’ researches is another challenge justifying educational methods. For example, “the supervision as pedagogic method [delivers] a special pedagogic model for learning” (Emilson and Johnsson, 2007). Process-oriented group supervision technique achieve improving



doctoral supervision because it involves balanced relationship, experience, skill and practice implemented from five requirements namely, “trust, theories, tools, training and time” (Emilson and Johnsson, 2007). In addition to funding and increased duties and workloads for supervisors and candidates, it is research supervision pedagogies. Pedagogies stimulate postgraduate educational reaction and abilities, however, scholars articulate this as a challenge. Lee and Murray (2015) believe postgraduate supervision is a deliberate response for higher education curriculum inculcating “research and enquiry skills” in students. Postgraduate supervision “requires a sophisticated pedagogical response” (Lee and Murray 2015) as a persistent form of instilling research education culture through instruction and teaching postgraduate students. Therefore, supervisor development programmes beget supervising knowledge, which then imparts enquiring knowledge and academic writing skills. Variety in postgraduate supervision pedagogical responses is always posing challenges to approaches of imparting research and enquiry skills to candidates.

## 5. Research Supervision Models

Research supervision models is an area of contention. According to Zuber-Skerritt and Roche (2004) effective postgraduate research supervision is achievable from “a new constructivist model of knowledge development”. Supervision attains operational results from approaches that construct knowledge and meaning from personal experience of the supervisor and/or the student and direct events in the environment.

In constructivist ideals, both the supervisors and the students are active participants in research and in making “own constructs or theories of effective supervision, and to communicate their suggestions for improvement” (Zuber-Skerritt and Roche, 2004). However, there are other views.

Manathunga (2007) argues for “mentoring as the most effective supervision strategy”. In mentoring ideals, postgraduate supervision works as a tutorials-point in a relationship between the supervisor and candidate. In addition, “Effective supervision as mentoring... supervisors need to be conscious of the operations of power in postgraduate supervision despite their best intentions” (Manathunga, 2007). Mentoring is coaching. The supervisor is a senior in academia and the student a junior to whom a senior is assigned to teach and he or she learns the ins- and the –outs of academic research. Manathunga and Goozée (2007) contend “a collaborative approach” of mentorship. This is an alternative to the power distance existing in research supervision. Halse and Malfroy (2010) explain “doctoral supervision is theorized as professional work that comprises five facets: the learning alliance, habits of mind, scholarly expertise, technê and contextual expertise”. Postgraduate research supervision is viewed as a two-way enterprise between the supervisor and the students. In other words, supervision is a collective exercise. Supervisors and students come together as learning groups and teams, in knowing to behave intelligently in the process of enquiry, in discipline specialising, in craftsmanship and in making practical experience and knowledge relate to the context of research and problem-solving.

Hence, Halse and Malfroy (2010) propose, “this model offers a more precise discourse, language and theory for understanding and preparing for the work of doctoral supervision in the contemporary university.”

Badley (2014) found “pragmatism as a useful way for supervisors to help their research students become effective research writers”. Pragmatist ideal is models effective supervision on the practical outcomes of research project and accepting the project as practical. Badley (2014) thus contends, “Pragmatism is not offered as an approach which must necessarily be adopted by supervisors but, rather, as a useful set of resources for them to use as they try to help doctoral students develop as thesis/research writers”. Thus, supervisory discourse, language and theory are tools that help postgraduate candidates to produce competent theses in teaching of research methods continuation aspect.

## 6. Continuation teaching research methods

The question ‘Is supervision continuation of teaching research methods?’ is critical. Supervision has the ability to extend into making research more meaningful where postgraduate students produce quality research and completed theses. Lee and Murray (2015) add with this question “how can we integrate current knowledge about academic writing with current knowledge about supervision?” Clearly, a process of teaching courses in research methods incorporates the supervision processes and strategies. This is practically an extension process of teaching research methods. Postgraduate students are developed on how to approach literature search, field study methods, and the how-to of the thesis write up. However, various scholars present different

view to how to integrate postgraduate supervision into teaching of research methodology as one continuous process.

For modern day university environments, postgraduate supervision process must be an intentional as an “educative process for research students” (Pearson and Brew, 2002). Thus, supervision process facilitates learning and acquisition of knowledge, skills, values, beliefs and habits for research behaviour and practices. It transforms postgraduate students from immature or undergraduate researchers to mature researchers and scholars of the discipline. According to Pearson and Brew (2002) “Indeed, pedagogy has been the ‘absent presence’ in the ‘supervision’ relationship, where the role of the supervisor as researcher has taken precedence over other roles... It was in reaction to this traditional approach that the teaching role of the supervisor has been emphasised” (Pearson and Brew, 2002). Supervision is thus a form of teaching rather than researcher role seen in addressing issues “about curriculum, method, teacher/ student interaction, and educational environment” (Pearson and Brew, 2002). As ongoing research methods teacher role, supervisor ensures that “the student [become] an independent professional researcher and scholar in their field, [and are] capable of adapting to various research arenas” (Pearson and Brew, 2002). Supervision as teaching is ‘coaching’ by which students are developed educationally. Students’ learning abilities and acquisition of research techniques, expert opportunities, and evaluation of solutions to problematic issues get unlocked (Pearson and Brew, 2002).

Kamler and Thompson (2006) use “supervision and supervisor” as descriptors of a “doctoral teacher”. Supervisory relationship process involves ‘power relations’, ‘cultural differences’, ‘pedagogical relationship differences’, ‘audience and examination’, and ‘the form of writing a doctorate’ (Kamler and Thompson, 2006).

A doctoral supervision as an educative process inculcates scholarly practice of writing up, identity, social practice and anxiety (Kamler and Thompson, 2006). A view is thus ‘writing’ a doctoral thesis is “ancillary ... to the real work of research. First, we do research, then we ‘write up’, as if that were a straightforward and mechanical act of reportage” (Kamler and Thompson, 2006). Treating postgraduate supervision separate from teaching research methods is a fundamental mistake. Candidates easily get misled resulting into delays in completing theses. The supervisors’ teaching role therefore entails “reconceptualising research writing so that it is not reduced to ‘writing up’” (Kamler and Thompson, 2006). This argument already questions pedagogies of supervision. These inculcate social practice “about meaning making and learning to produce knowledge in particular disciplines and discourse communities” (Kamler and Thompson, 2006). Postgraduate research supervisors pay maximum attention to ‘social action’, which involves research writing variables specific to the context - language, history, values, and practices (Kamler and Thompson, 2006). Unfortunately, historical emphasis on supervisor development is largely concerned with the administrative and mechanical function of conducting doctoral research. This focus underestimate a continuum aspect of research methods teaching in postgraduate supervision.

Emilsson and Johnsson (2007, p.165) argue that process-oriented supervision is pragmatic because it is “a specific pedagogical model for learning [which is] useful for PhD candidates”. Process-oriented supervision is rooted in an educational viewpoint manifest in experience which “increase the knowledge and competence of the ... students” (Emilsson and Johnsson, 2007, p.166). The settings of pedagogical model of postgraduate supervising takes “instructional form” and content (Emilsson and Johnsson, 2007, p.168); that is, taking the form of teaching research methods which can be delivered using tutoring, lecturing and case study techniques, and theoretical and reflective applications. Process-oriented postgraduate supervision encourages students to theorise and reflect on what they are reading, researching and learning and then relate to their own work world and lifeworld. Manathunga (2007) then critiques supervision as a pedagogical practice based on neoliberalism positions which involves educational and instructional activities and preparation between supervisors and students “as equal, autonomous and rational adults and suggests that the operations of power no longer exist between them”. This notion legitimizes adult-to-adult codes as building and maintaining supervision relationships - a process that happens on mutual grounds of attitude. Scholars ardently reject this notion.

Manathunga and Goozée (2007) deal with a postgraduate supervision theoretical premise about the “‘always/already’ autonomous” and the “‘always/already’ effective”. On the one hand, postgraduate candidates are perceived as coming from undergraduate ready-made postgraduate researchers possessing a research talent. On the other hand, postgraduate supervisors are ready-research-supervisor expert possessing

supervising expertise. Against this, it is thus “The supervisor’s job essentially is to ‘take talent’ rather than ‘to grow talent’” (Manathunga and Goozée, 2007, p.309). If the postgraduate candidate comes with research talent, therefore she or he may require no teaching-based approach supervision required for postgraduate development. The ‘always/already autonomous and effective’ premise is simply denying postgraduate research supervision as extension of teaching research methods; hence, “This construction of supervision is ... based on transmissive approach to education, where students want to be filled up with their supervisor’s knowledge” (Manathunga and Goozée, 2007).

A counter view is about the ‘teaching research role’ by which mentoring research students socialises “them into disciplinary research communities and discourses, providing emotional support, and assisting with broader career development” (Manathunga and Goozée, 2007). Halse and Malfroy (2010) argue there is “A lack of strong public discourse of pedagogy for research education” to usher students into research perspectives and practice. Thus, supervision as a pedagogy for research education provides research students with research experience, knowledge of methods, validity and scope of their discipline (Lee and Murray 2015).

Lee and Murray (2015) present five approaches to supervising students’ research projects. These are, “functional: where student’s projects are managed; enculturation: where students are encouraged to become members of the disciplinary community; Critical thinking: where students are encouraged to question and analyse their work; emancipation: where students are encouraged to question and develop themselves; developing a quality relationship: where students are enthused, inspired and cared for” (Lee and Murray, 2015). This postgraduate supervision framework helps supervisors to pay attention to the writing-up.

However, many often ask themselves “how do I help my students to write at the right level?” (Lee and Murray, 2015). The trend is postgraduate supervision process is married to the teaching form and content of research methods.

## **7. Theoretical Framework**

Literature frames this paper within the educational research theory. In South Africa, educational research outlines responsibilities researchers have – both, the academic researchers as experienced researchers, and the postgraduate students as new researchers (Mitchell, 2008). Educational research aims to create, intensify and expand a whole body of scientific research extending from postgraduate classroom environments to the research field settings including writing articles and theses productivity. Literature addressing education research is the basis for this study on supervising and teaching research methods as two sides of the same coin - research methods curricula. Research methods curricula entail good teaching methods and supervision practices by which postgraduate students can learn and develop better as scholars and professionals (Hativa, 2001; Mitchell, 2008). Both teaching and supervising provide postgraduate students with logical structure of interconnected theory-based and research-based behaviors appropriating critical and reflective thinking and practical skills in designing, implementing or managing empirical research (Hativa, 2001; Barraket, 2005). This is the basis of discussion on the view that postgraduate supervision extends teaching research methods.

## **8. Methods**

This paper used basic content analysis (Weber, 1990) because the results are “used to empirically document a perceived social problem and as evidence from which to abductively advocate for change” (Drisko and Maschi, 2015). This method is based on two reasons. Firstly, postgraduate research supervision and teaching research methods are rooted in multidisciplinary and interdisciplinary literature. Secondly, within the South African educational research context reviewing postgraduate research supervision and teaching research methods required logical forms of analysis and a set of observations. Content analysis methods enabled to arrive at the simplest explanation and achieving the goal of postgraduate research supervision and teaching research methods. The coding of textual material from different studies achieved validation of the discourse.

Texts and excerpts from different journal articles were systematically categorised into 11 source documents or references. These references were then uploaded into Nvivo. Coding texts in Nvivo produced quantitative and qualitative results for analysis and discussion. Self-awareness and reflexivity of the researcher played a role in this content analysis process. Pulling out “content features” as nodes, and then expanding these features, as linkages between supervision and teaching, into “many words of the text ... classified into much fewer categories” (Drisko and Maschi, 2015). Descriptive result were generated from computed Pareto analysis

technique from coded texts as themes involving the problem of practices between supervising research and teaching research methods as competing for attention (Illes-Seifert and Paech, 2009). Total number of theme occurrences is around 35 as determined by the coding of the texts. Themes were computed from this total number of theme occurrences as per coding in Nvivo. Then by applying the 80/20 Pareto principle of analysis, this paper determined 1) the vital few and 2) the trivial many from the problem of practice and pedagogy (Illes-Seifert and Paech, 2009). This Pareto technique resulted in estimating the benefit delivered by each theme and choosing the most effective themes to deliver a total benefit reasonably close to the maximal possible practices and pedagogies of supervising research and teaching research methods.

## 9. Results and Findings

The review question was what are the possible maximal problems of practices and pedagogies of supervising research and teaching research methods are scholars grappling with in general? Anticipated result is presented below.

### 9.1 Result

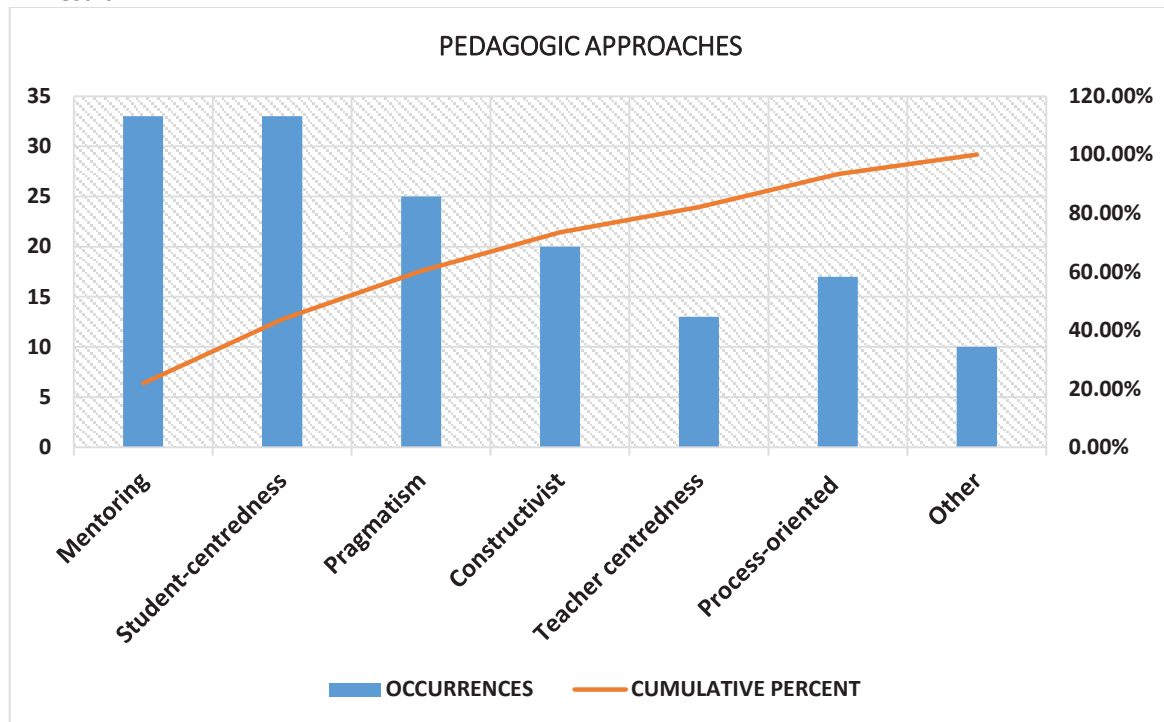


Figure 1: Pedagogical and practice issues (Source: Author)

Figure 1 shows 6 key themes that exist in the problems of postgraduate research supervision and teaching research methods discourse, pedagogies and practices. The result is that mentoring, student-centredness and pragmatism are the 'vital few', and constructivist, teacher centredness, process-oriented and other themes are 'trivial many'. Mentoring, student-centredness and pragmatism are themes dominating among the reviewed studies.

Another review question was what are the possible leading practices and pedagogic linkages between supervising research and teaching research methods that scholars are contending in general? The result is presented below.

Figure 2 shows 5 themes exist in studies infer common modalities in practice and pedagogic modalities between postgraduate research supervision and teaching research methods. A result is that scholarly proficiency and research expertise modalities are the 'vital-few', while learning grouping, behave intelligently and contextual knowhow modalities are the 'trivial-many'. Scholarly proficiency and research expertise modalities are dominant in reviewed studies.

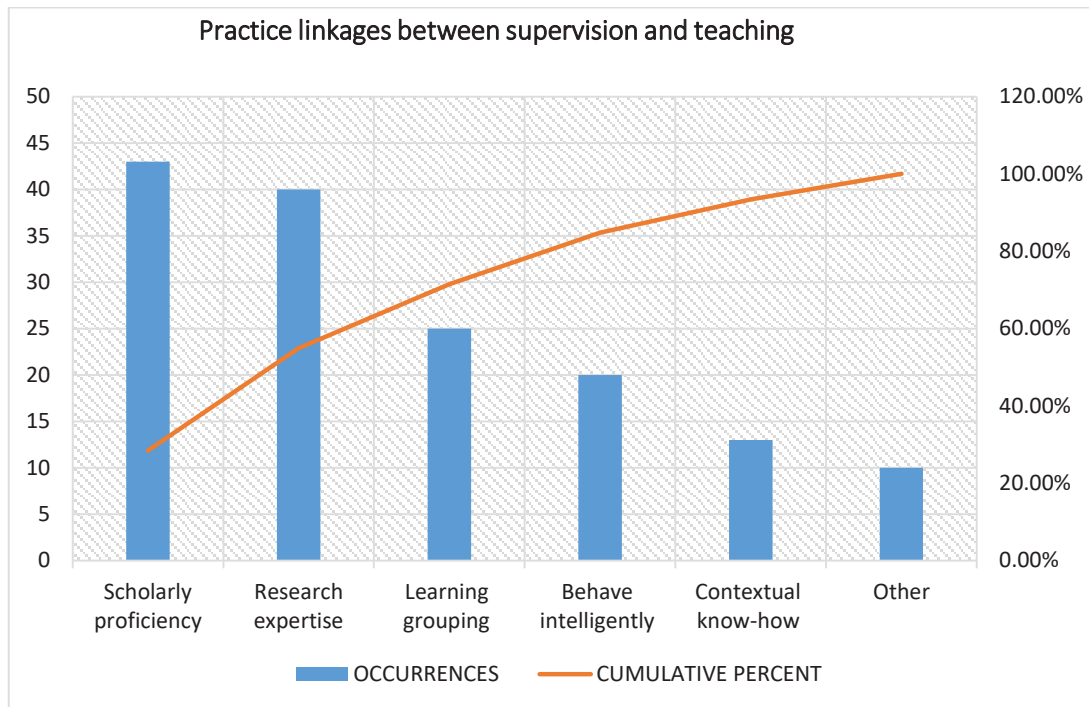


Figure 2: Practice linkages (Source: Author)

## 9.2 Findings

Finding consider the question, what supervision practice and pedagogic methods does literature address in view of business and management postgraduate research project process in South Africa? The analysed results infer:

- Widespread shared pedagogical issues and challenges in
  - Postgraduate supervision.
  - Teaching research methods.
- Common practical and pedagogical modalities in
  - Postgraduate supervision.
  - Teaching research methods.

Thus, this paper infer reviewed studies on educational research extensively address pedagogic and practice issues, and provide discourse on modalities that mutually encompass postgraduate research supervision and teaching research methods. While this is the case on whole, this paper infer missing evidence is for the business and management educational studies in the South African context to deal with postgraduate research supervision and teaching research methods discourses.

## 10. Discussion: Supervision extends teaching research methods

Drawing from the findings, a contention is that discourse on university postgraduate research supervision and teaching research methods are critical. In supervision and teaching research discourses, both pedagogy and practices modalities are with substance. When it comes to postgraduate research productivity and quality discourses, it is never about supervision methodology and motivation of candidates and it is not about the instrumentality of teaching research methodology. The issue ought to be pragmatist. It requires dialogues on modalities capturing the continuation between supervision and teaching research methods to expedite disciplinary knowledge economy.

A number of facets explain the way in which postgraduate research supervision extends teaching research methods. This extension happens as:

- Continuous growth of current and future knowledge based economy through working and learning in research grouping or teams.

- Ongoing transforming of research students into behaving intelligently as knowledge workers and managers.
- Closing synergies between the knowledge conversion process and scholarly proficiency.
- Bringing innovations into research education and expertise.
- Finding social contract for society warrants innovations in research education and develop in contextual expertise.

These elements necessitates a contention that postgraduate supervision and teaching possess some characteristic of knowledge incubation in which both equally contribute to the maturation of discourse communities of knowledge workers.

Locating this position within the South African context of business and management studies settings may be superficial. Literature on business and management education research rarely deals with postgraduate research supervision extending teaching research methods. This is what this paper is initiating. A discourse contributing to, according to Roy (2018), the creating and implementing of conceptual understanding and knowledge of research methodology in the academic business and management discipline. The fundamental basis of this discourse rests with developed comparative perspectives on supervising and research teaching modalities - methods, scientific theories and practices (Roy, 2018). Methods, scientific theories and practices are key modalities in research supervision extending teaching research methods. It is perspectives such as this would have to penetrate business and management studies. Table 1 below demonstrate how the modalities methods, scientific theories and practices contribute to the discourse on research supervision as continuing teaching research methods.

**Table 1:** Peaching research and supervising research project (Source: Author)

	TRM and RS Contribution	Ideals developed from TRM and RS
METHOD	Breaking away from tension with traditional methods	Intersectionality
		Plurality in methods
	Creativity	Action and doing
		Originality
	Philosophy	Researcher's position
		Inductive
Deductive		
THEORY	Diversity of concepts/theories in the discipline of study	Gaps in literature
		Diversity of ideas
		Conceptual clarity
	Challenging existing knowledge and wisdom as gaps in the body of knowledge in the discipline of study	Integrative
		Methodological.
		Theoretical
		Historical
		Constructive
PRACTICE	Contextual and Cultural distance (gaps)	Bodies, organisations and society
		Communities of researched
	Organisational stories	Organisational culture.
		Organisational knowledge
	Explicit and implicit stories	Communities of practice
		People and societies
		Planet and environment
	Starting and ending point	Writing up
		Audience
Dissemination		

Table 1 above presents teaching research methods as a pathway delivery of postgraduate supervision. In university educational research, postgraduate research supervision should thus be perceived a form of art of continuing teaching research methods. In this art, research methodology curricula, supervision and teaching do not judge the candidate. Rather, it creates a research writer and scholar. This enterprise is also humane. Supervision and teaching create a character of excellence and expert, identity and social practice in postgraduate candidates.

## 11. Conclusion

This paper addressed the educational research issue by reviewing literature for business and management postgraduate research supervision extending teaching research methods develop. However, in South Africa literature is limited in addressing supervision practice and pedagogic issues as a continuation of teaching research. Contribution is towards the educational research knowledge, values and ideas required for research supervision that extends the teaching of research methods in business and management disciplines. In South Africa, many business and management academic supervisors and teachers can start thinking about how to continue technical and conceptual skills and ideals from teaching research methods. This paper draws conclusion on lessons and experiences about business and management educational research. Since university research curricula continue to evolve, South African educational research context discourses on how postgraduate supervision extends teaching research methods are yet to emerge. The starting point is in considering pedagogic and practice elements involved in both supervision and teaching research method, and then adopt these elements for business and management research curricula.

Therefore, to end the paper that suggests postgraduate supervision continues teaching research methods emphasis made is that in the South African context of business and management educational research knowledge and understanding continues to shift and develop. There is no essential or absolute answer to the postgraduate research supervision pedagogy and practice question for academic practitioners to adopt and claim as continuing teaching research methods. However, this very paper is possibly a new question and initial answer to this area of educational research.

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# Converting Qualitative Data into Quantitative Survey Instruments: A Detailed Guide

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**Abstract:** Mixed-methods research designs are increasingly popular, especially in the management domain because they hold the potential to offset the weaknesses inherent in mono-method qualitative or quantitative designs. Some studies convert qualitative data into quantitative data using content analysis processes. Mixed-methods studies, especially in entrepreneurship research, the domain in which this study is located, tend to focus more on sequential explanatory mixed-methods designs. Sometimes, a quantitative phase is conducted first, followed by a qualitative phase. Other studies have focused on converting qualitative data into quantitative data through content analysis without conducting surveys. The use of a qualitative phase to develop a questionnaire is more common. However, the actual process of converting qualitative data into operationable constructs and survey items is usually not clearly articulated. This creates an opportunity to contribute to a better understanding of the process of transitioning from a qualitative to a quantitative study. This paper proposes such an approach, using an example of a study of the skills entrepreneurs use at different phases of the entrepreneurship process. Based on qualitative interviews with 26 participants, transcripts were analysed in Atlas ti and codes were inductively derived, which represented the full range of entrepreneurial skills used by entrepreneurs during the business development process. These codes were categorized into 9 groups of skills considered important in performing entrepreneurial activities. Based on the outputs of the Atals ti analysis, the skills categories became the quantitative variables, and the underlying codes were converted to measurement items through the application of a consistency matrix. Next, scales were applied to the measurement items and the questionnaire was constructed. Finally, the instrument was then tested on a larger sample of 235 entrepreneurs and the reliability of the instrument was confirmed. By providing a detailed account of the process of converting qualitative data into a quantitative survey, this paper enhances the effectiveness of mixed-methods designs. The article concludes with implications for mixed-methods researchers who want to develop new instruments and scholars conducting research on skills.

**Keywords:** Entrepreneurship, skills, mixed-methods, qualitative, quantitative, entrepreneurs

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## 1. Introduction

There is scant research on how to design instruments to measure skills. Mixed-methods studies, especially in entrepreneurship research, tend to focus more on sequential explanatory mixed-methods designs where a quantitative phase is conducted first, followed by a qualitative phase (Molina-Azorín et al, 2012). Other studies have focused on converting qualitative data into quantitative data through content analysis without conducting surveys (Srnlka & Koeszegi 2007). A notable contribution is that of Crede and Borrego (2013) who showed how data extracted from qualitative ethnography were configured into constructs and survey items in retention studies of engineering students.

The study reported on here, which builds on Mamabolo, Kerrin and Kele (2017), applied a sequential exploratory mixed-methods design where a qualitative phase was conducted first, followed by a quantitative phase. The main purpose of this design was to use initial results from the qualitative phase to develop a skills survey research instrument (Creswell 2009). The secondary purpose was to show step-by-step conversion of data from the qualitative phase in designing a research instrument. The qualitative data were generated from 26 participants and the quantitative survey involved 235 entrepreneurs. Scholars have previously argued that mixed-methods research may help to improve entrepreneurship research (Loué & Baronet 2012; Molina-Azorín et al, 2012) and thus this study contributed to entrepreneurship research methodology by proposing a process of converting qualitative findings into a quantitative survey instrument.

In the subsequent sections of the article, current research on mixed-methods research in entrepreneurship is reviewed. The qualitative results of the study that were used to develop the measurement instrument and the findings of the quantitative phase are discussed in the methodology section. The article concludes by pointing out practical implications and recommendations for entrepreneurs, mixed-methods researchers and entrepreneurship scholars.



## **2. Literature review**

### **2.1 Mixed-methods Research**

Mixed-methods research, which is relatively in the nascent phase, represents research that involves collecting, analysing, and interpreting quantitative and qualitative data in a single study or in a series of studies that investigate the same underlying phenomenon (Leech & Onwuegbuzie, 2009). This research method is associated with pragmatism philosophy (Johnson, Onwuegbuzie & Turner, 2007) which argues that the research question determines the research philosophy, making it possible to work with both positivist and interpretivism (Saunders, Lewis & Thornhill, 2009). Denscombe (2008) highlights that pragmatism in mixed-methods first provides a fusion of approaches that are regarded as sterile. Second, pragmatism gives a basis for using mixed-methods as a third alternative in cases where neither qualitative nor quantitative alone will provide adequate findings. Lastly, pragmatism is built on the notion that a good social research will almost inevitably require the use of both quantitative and qualitative research to provide an adequate answer. Simply put, pragmatism applies the practical approach, which combines the different points of view to assist in data collection, analysis and interpretation (Saunders et al, 2009).

There are many mixed-methods typologies (Denscombe 2008; Johnson et al, 2007); however, Leech and Onwuegbuzie (2009) suggested a three-dimensional typology that attempts to provide an integrated view of mixed-methods. Thus, mixed-methods research has these dimensions: Level of mixing (fully or partially mixed), time orientation (concurrent or sequential) and emphasis of approaches (dominant or equal) status design.

The level of mixing refers to whether the mixed-methods research is partially mixed or fully mixed. Concurrent time orientation denotes that both qualitative and quantitative occur at the same time while in sequential one method follow after the other. In dominant design, one method has priority over the other while equal status design prioritizes both methods. Despite many typologies, there is an agreement that the strength of mixed-methods research is that it offsets the weaknesses inherent in mono-method qualitative or quantitative designs (Creswell, 2009; Saunders et al, 2009).

Few sequential exploratory studies that start with qualitative research and end with quantitative research scarcely explained a detailed conversion process from qualitative to quantitative research. An example of one of the few studies is Crede and Borrego (2013) who converted qualitative data into survey items in a retention of engineering students study. Therefore, this study expands on Crede and Borrego by providing a detailed systematic conversion process of qualitative data into quantitative survey instrument.

### **2.2 Mixed-methods Research in Entrepreneurship**

Entrepreneurial skills, important in running a business, include these categories opportunity recognition and exploitation, intuition and vision, marketing and monitoring, human resources management, marketing and commercial activities, leadership, self-discipline, and financial management (Mamabolo et al, 2017; Loué & Baronet 2012). Research on entrepreneurial skills seems to favor the positivist paradigm above pragmatism and interpretivism (Chell 2013). The continued criticisms of positivism have shifted the focus of entrepreneurship research towards social constructivism (Chell 2013) and mixed-methods studies (Loué & Baronet 2012). Molina-Azorín et al (2012) mention that, due to the multi-faceted nature of entrepreneurship, mixed-methods research may provide a better opportunity to understand the phenomenon of inquiry. One of the typical mixed-methods designs in entrepreneurship research is qual → QUAN, “where majority of these studies, the use of a qualitative part before the quantitative one permits to understand the specific context, the development or extension of theory (that then can be tested with the quantitative approach), identify key variables, and improve the measurement instrument of the quantitative phase” (Molina-Azorín et al, 2012: 448). Although some of the mixed-methods studies revise or design the measurement instrument from qualitative findings, they do not clearly indicate the process thereof (Camarero Izquierdo, Carrión & Gutiérrez, 2008; Carter et al, 2007; Chen, Yao & Kotha 2009; Cliff, Jennings & Greenwood 2006; Desa 2012; Dewald et al, 2007; Loué & Baronet 2012; Murnieks et al, 2016). This creates an opportunity to contribute to a better understanding of the process of transitioning from a qualitative to a quantitative study.

This study is part of a skills research project by Mamabolo et al (2017) who published on entrepreneurial skills required in an emerging market context. In their mixed-methods paper, the authors did not show the process of designing a quantitative research instrument using qualitative data. Therefore, this continuity paper articulates the steps that were taken by the authors to convert the qualitative findings into quantitative

survey. The contribution to research methodology is the clear step-by-step conversion process which is relatively underexplored in entrepreneurship and research methodology. In addition, the study provided a research instrument that can be used to further entrepreneurial skills research.

### **3. Research Method and Design**

The design choice for this study was a mixed-methods design. Mixed-methods originated as triangulation, combining qualitative and quantitative methodologies in studying the same phenomenon (Denzin 1978). The strategy followed in the reported study was of a sequential exploratory nature where qualitative interviews were conducted in Phase I, followed by a quantitative survey in Phase II (Cresswell 2009). The quantitative phase was prioritized in scope and scale over the qualitative phase, thus making the design 'small qualitative' and 'big quantitative' or qual-QUANT (Cresswell 2009). The qualitative findings were used to guide questionnaire development for the quantitative study. In this study, the focus was on determining skills at a given point, thus adopting a cross-sectional study as the time horizon (Saunders et al, 2009).

A mixed-methods study provides strengths that offset the weaknesses of both quantitative and qualitative type studies (Jick 1979). One might argue that in the case of this inquiry a quantitative approach would be weak in supporting intrinsic understanding of the skills employed by entrepreneurs. However, qualitative research makes up for these weaknesses, as its strength is to help capture contextual perspective. On the other hand, qualitative research is often seen as analytically deficient because of the heavy reliance on personal interpretations made by the researcher and its inability to produce generalizable data. Therefore, the quantitative study complements these weaknesses as it is able to generalize and occurs with minimal researcher bias (Castro et al, 2010).

#### **3.1 Phase I: Qualitative Phase**

##### *3.1.1 Participants*

The individual entrepreneur was the unit of analysis. An entrepreneur is defined as an individual with entrepreneurial characteristics who takes actions to start and manage a business. The qualitative data were generated from a purposive sample of 26 respondents, comprising 20 entrepreneurs and six national experts on entrepreneurship. The related industries included agriculture and nature conservation; manufacturing, engineering and technology; electricity; wholesale and retail trade; transport and communication; financial services; community, social and personal services.

##### *3.1.2 Data Collection*

The qualitative phase data collection adopted semi-structured, in-depth face-to-face interviews with both entrepreneurs and national experts in entrepreneurship. This method of interviewing provided the researcher with an opportunity to 'probe' answers, encouraging interviewees to explain and build on their responses (Saunders et al, 2009). The interviews were recorded on a voice recorder, and transcribed on the Microsoft Word software program. Additional notes were taken during the interview. An hour-long interview appointment was secured with each participant.

##### *3.1.3 Qualitative Data Analysis*

The qualitative data were analyzed using a deductive approach which relied on an organizing framework to direct data analysis (Saunders et al, 2009). The five steps that constituted the deductive data-analysis approach were: developing the code book, preparing data for analysis, developing and refining codes, and presenting and interpreting the data. The researcher started by developing a code book of skills that included categories of skills, their sub-skills and operational terms. This comprehensive log of codes and categories of skills was derived from the reviewed skills literature. After all interviews were transcribed, the next step was to closely appraise the data, which involved reading through all the data for a general sense of the information and to reflect on its overall meaning (Creswell, 2003).

Qualitative data analysis software, ATLAS.ti was used to code, organise, compare different codes and sort the significant data that were best in describing the qualitative findings. At the end of coding, there were 96 codes of skills. The last step of data analysis involved revising and refining the developed skills categories. The contents of the categories were closely appraised for contradictions and emerging themes. Some skills categories with related meanings were merged under a superior category and, to some extent, naming the

new category (Thomas 2006). To enhance reliability, transcripts were checked to eliminate any prominent errors made in the transcription process and to ensure the accuracy of the interview data representation.

### 3.1.4 Qualitative Findings

The first step in the study was to identify skills applied by entrepreneurs in running their businesses. As a result, nine categories of skills were identified from the qualitative data analysis. The categories of skills found to be important in carrying out entrepreneurial activities were start-up skills, technical skills, business management skills, financial management skills, marketing skills, human resource management skills, social and interpersonal skills, leadership skills and personal skills. These categories were reduced to four clusters, namely start-up skills, technical skills, core business skills, and personal and leadership skills. The core business skills cluster comprises marketing, business management, financial management and human resource management skills. Finally, the personal and leadership skills cluster included social and interpersonal skills, leadership and personal skills. Table 1 summarizes the qualitative findings.

**Table 1:** Qualitative findings of skills and their sub-categories

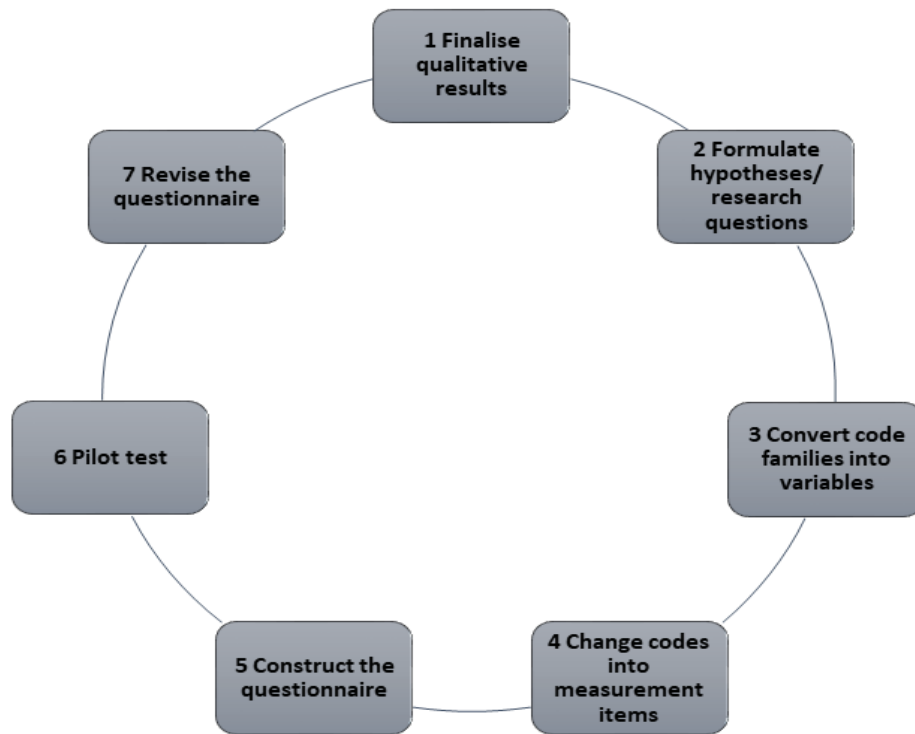
Cluster	Category	Sub-skill	Operational definition
Start-up skills	Start-up skills	Prototyping	-Testing the feasibility of the business idea
		Starting up a venture	-Gathering resources to start a new venture
		Drafting business plan	-Developing a business model or plan to run the business
		Growth planning	-Planning the growth of the business in short and long term
		Environmental Scanning	-Scanning trends outside the business's environment
		Innovation	-Developing new ideas, products and envisioning possibilities
		Calculated risk	-Taking calculated risks to run the business
		Opportunity recognition	-Identifying business opportunities
		Resourcefulness	-Ability to gather new resources to start a business
Core business skills	Business management skills	Problem solving	-Identifying and solving problems encountered in the business
		Strategic competence	-Identifying where the business is and where it needs to go
		Legal skills	-Complying with the law and regulations set by government
		Planning	-Planning the activities in the business
		Negotiation	-Negotiating to get better business deals
		Organizing work	-Organizing the activities in the business
		Decision making	-Making decisions in running the business
		Delegation	-Delegating tasks to employees
		Distribution model	-Making the product available in the market
Core business skills	Marketing skills	Market Research	-Conducting market research
		Monitoring competitors	-Monitoring and benchmarking the competition
		Positioning	-Finding the market position in which the business operates
		Selling	-Selling the product, either tangible or intangible
		Advertising the business	-Seeking out new clients e.g. at trade shows or exhibitions
		Branding	-Creating a positive brand or image of the business
		Customer experience	-Creating good customer experience and loyalty
		Social media marketing	-Using social media to advertise the business
		Adapting products	-Modifying products to client demands
Core business skills	Financial management skills	Pricing	-Setting prices for products or services
		Raising capital	-Gathering financial resources to start or to grow the business
		Managing cash	-Managing the money transferred in and out of the business
		Calculating costs	-Calculating costs, cost prices and the margins
		Filing up tax reports	-Filing tax returns with the revenue services
		Using financial software	-Using financial software to produce financial reports
		Managing billing	-Managing invoicing and collecting payments from clients
		Book keeping	-Recording and organizing financial transactions
		Financial forecasting	-Planning future financial objectives
Selling/buying shares	-Selling a certain portion of the company shares in exchange for money to grow the business		
Core business skills	Human resource management skills	Recruitment	-Recruiting and employing the right people for the job
		Developing employees	-Evaluating if the employees have the right skills to perform the tasks
		Evaluating employees' skills	-Assessing the overall performance of employees
		Evaluating performance	-Evaluating and overseeing the employee's potential and career
		Setting roles	-Defining jobs in terms of activities and skills and drawing up job descriptions
		Remuneration	-Implementing pay policy by defining salaries and bonuses
		Dismissal	-Terminating employee contracts while respecting employment law
Using HR technologies	-Using software to manage human resource matters		

Cluster	Category	Sub-skill	Operational definition
Technical skills	Technical skills	Industry specific skills	-Applying skills that are relevant in the industry
		Product development	-Developing the product, either tangible or intangible
		Managing operations	-Managing the production of the products or services
		Managing supplies	-Distributing the products to the market
		Quality audit	-Assessing if the product adheres to industry norms or standards
		Technology & production process	-Making use of the specialized technology in the production processes
		Continuous innovation	-Continuously innovating existing products or services
Personal and leadership skills	Personal skills	Accountability	-Focusing on the intended goals or purpose
		Hard work	-Going the extra mile and working long hours
		Intuition	-Following your gut feeling when making decisions
		Passion	-Enthusiastic about starting and running a business
		Single-mindedness	-Sticking with something even when the going gets tough
		Assertiveness	-Saying no to business deals without being too desperate
		Emotional coping	-Dealing with stressful situations
		Discipline	-Doing what is supposed to be done
		Determination	-Not giving up
		Resilience	-Recovering faster from hard circumstances
		Creativity	-Initiating new things in the business
Personal and leadership skills	Leadership skills	Visionary	-Having a vision about the future of the business
		Inspiring employees	-Encouraging and bringing the best out of employees
		Sharing vision	-Sharing the vision of the company with the employees
		Culture of performance	-Encouraging employees to have excellent performance
		Thought leadership	-Establishing oneself as the leader in the industry
		Leading responsibly	-Leading in a responsible and ethical manner
Personal and leadership skills	Social and interpersonal skills	People skills	-Showing sensitivity to people's feelings and emotions
		Communication skills	-Communicating meaningfully with employees and stakeholders
		Building relationships	-Building relationships of trust with clients
		Understanding cultures	-Working well with people of different cultures
		Political astuteness	-Identifying and overcoming the political challenges
		Networking	-Networking to build resources and opportunities
		Sociable	-Approachable and forming relationships easily
		Social influence	-Ability to influence other people
		Listening	-Listening to and hearing what other people are saying

Source: Qualitative findings and adaptation of Mamabolo et al (2017).

### 3.2 Phase II: Survey questionnaire design process

The seven steps followed in converting qualitative data into a survey instrument are depicted in Figure 1. The process started with the conclusion of qualitative findings by refining the research questions and hypotheses. The next step was to transform code families or parent codes into quantitative variables, which may include independent, mediator, moderator and dependent variables. Subsequently, codes and their quotations were converted into measurement items. After all variables were assigned measurement items, a survey questionnaire was constructed. The penultimate step was to do a pilot study to ensure the survey questionnaire was reliable and valid. Finally, results of the pilot study were used to revise and improve the quality of the survey questionnaire.



**Figure 1:** Survey questionnaire design process

### 3.2.1 STEP 1: Finalize qualitative results

It is critical to ensure that the designed survey instrument will gather the exact data that will answer the research questions and objectives of the study. To ensure that precise data were collected, the first step was to ensure that qualitative findings were presented in such a way that it would be easy to refine the research questions and hypotheses.

### 3.2.2 STEP 2: Formulate hypotheses or research questions

After finalising the qualitative findings, the researcher refined the existing research questions and hypotheses for the main study. When the hypotheses were refined, it was crucial to identify the relationship between variables prior to designing the questionnaire.

### 3.2.3 STEP 3: Convert code families (categories) into variables

The next task was to start selecting code families or parent codes or categories that would be used as variables for testing the hypotheses. With the qualitative phase, the focus was mostly on constructs and how they related to the research questions and theoretical underpinnings. However, the quantitative phase is about quantitative variables and how they relate to the hypotheses. The skills categories became the quantitative variables, which were: start-up skills, technical skills, business management skills, financial management skills, marketing skills, human resource management skills, social and interpersonal skills, leadership skills and personal skills.

### 3.2.4 STEP 4: Change codes into measurement items

The measurement items for the variables were derived from the qualitative codes. Since there were many codes from qualitative findings (as shown in Table 1), not all of them were used as measurement items. The criteria for selecting codes as measurement items were based on the frequency, consensus and uniqueness of each code. Frequencies were derived from qualitative findings that showed the number of occurrences of each code. Some codes were selected based on consensus or agreement of the respondents. Codes that were unique and showed variance from the norm or the expected were also included as measurement items. Table 2 shows the criteria for selecting measurement items for financial management skills.

The quotations of the codes were then converted into survey questions. In order to ensure consistency in the transition, it is important to have a consistency matrix, as depicted in Table 3. The elements in the consistency

matrix comprise research questions, hypotheses, qualitative data, codes or measurement item, code families or variables and survey questions.

**Table 2:** Criteria for selecting codes as measurement items

Measuring items for financial management skills	Frequency		Consensus	Uniqueness
	High	Low		
Managing cash	X		X	
Managing billing	X			X
Book-keeping		X		X
Filing tax reports		X	X	

**Table 3:** Consistency matrix for questionnaire design

Research question	Hypothesis	Code families (category)/ variables	Codes/ measuring items	Qualitative data (quotations)	Survey question
What is the relationship between work experience and marketing skills?	There is a relationship between work experience and marketing skills.	Marketing skills  Work experience	Branding	“So marketing is important from the initial phase of the business because we need to build an image or brand before we could have the product”	Are you creating a positive brand or image of the business?

Clarity about the scales used to measure variables is important. This study applied a hybrid design combining nominal and ordinal scales (see Table 4). The nominal scale used multiple-choice questions where only one answer is sought, for example gender. The ordinal scales used closed-ended questions with a 5-point Likert scale from which respondents were required to select an option. The Likert scale measures responses along a dimension from positive to negative from which possible answers are selected (Likert 1932). Entrepreneurs were asked about the extent to which they applied, for example, business management skills in their businesses. So the ordinal-scale responses expected in this study ranged from never, almost never and sometimes, to almost every day and every day.

**Table 4:** Quantitative variables

Variables	Measurement items	Scale of measurement
<b>Skills:</b> <i>The proficiency in performance of a task that can be improved by training and practise.</i>	Start-up	<u>Ordinal</u> (The extent to which entrepreneurs applied skills on Likert scale of 1-5)  1=never, 2=almost never, 3=sometimes, 4=almost every day, and 5=every day
	Business management	
	Financial management	
	Marketing	
	Human resource management	
	Technical	
	Leadership	
	Social and interpersonal	
Personal		
<b>Control variables</b>	Age, gender	<u>Nominal and ordinal</u> Multiple choice
<b>Work experience</b>	Never worked, less than 5 years, 5-10, 10-15, 15-20 and more than 20 years.	<u>Ordinal</u>

### 3.2.5 STEP 5: Construct the survey questionnaire

After the quantitative variables and measurement items were finalized, the next step was to construct the questionnaire. Firstly, the significant aspect of a questionnaire is to determine operational terms to be used for measurement items in the instrument. The variables were given operational terms as detailed in Table 1.

Secondly, the layout of the questionnaire should be clear and pleasing to the eye of the respondent. In addition, there should be a clear explanation of the purpose of carrying out the research. These parameters were considered in the process of designing the survey questionnaire illustrated in Table 5 below.

### 3.2.6 STEP 6: Pilot test

After the design of the measurement instrument was completed, a pilot test was conducted. The questionnaire was also taken through a peer-review process to ensure it was effectively aligned with what the

study intended to achieve. The results from the pilot study were used to modify the research instrument and were not incorporated in the main study.

**Table 5:** Survey questionnaire

Variables	Measurement items
Entrepreneurial skills	<p>To what extent have you used the following start-up skills?</p> <ul style="list-style-type: none"> <li>• Testing if my idea will be feasible</li> <li>• Gathering material and financial resources to start a new venture</li> <li>• Developing a business model or plan to run the business</li> <li>• Planning the growth of the business in both short and long term</li> <li>• Scanning business trends outside the business's environment</li> <li>• Developing new ideas, new products and envisioning possibilities</li> <li>• Taking calculated risks to run the business</li> <li>• Identifying business opportunities</li> </ul>

### 3.2.7 STEP 7: Revise the questionnaire

The final step was to revise the questionnaire based on results from the pilot study. The combination of pilot results and qualitative frequency tables informed any need for amendments to the questionnaire. Questions which the respondents struggled to answer were thoroughly evaluated and some excluded from the measuring instrument. Once all issues encountered in the pilot test were resolved, the final survey data collection commenced.

### 3.3 Phase III: Quantitative Phase

After the instrument was designed, it was tested on a larger population of entrepreneurs. The unit of analysis for the quantitative phase was the entrepreneur, which was the same as for the qualitative phase. The quantitative survey data were collected using a standardized structured closed-ended self-administered questionnaire completed by entrepreneurs. The questionnaire was administered electronically using an online service that allows users to create web browser surveys. At the closure of the survey and data cleaning, 235 responses were deemed fit to be included in the analysis. The skills derived in the qualitative phase, which are start-up (entrepreneurial), business management, financial management, marketing, human resource management, technical, social and interpersonal, leadership and personal, were confirmed through confirmatory factor analysis (CFA) (Hair et al, 2010). In addition, The Cronbach alpha test was used to determine internal consistency where reliability coefficients around 0.90 are considered 'excellent', values around 0.80 are 'very good', and values around 0.70 are 'adequate' (Kline 2011). The results shows that all the skills constructs were identified with an insignificant Chi-square, GFI > 0.90, CFI > 0.90, RMSEA 0.05 – 0.08 and Cronbach Alpha > 0.70 (Hair et al, 2010).

## 4. Discussion and Conclusion

The study employed a mixed-methods research design using interviews and a survey sequentially. This type of design is significant in generating and testing theory in the same study (Creswell 2009). The use of the mixed-methods research in the reported study had benefits in a number of ways. Firstly, the interviews identified the skills needed to execute entrepreneurial activities and use the results of the qualitative phase to develop an instrument for measuring applied skills in a survey. Secondly, the study demonstrated the process of accurate questionnaire design. Finally, the survey phase was used to triangulate data gathered from the interviews.

The argument raised by the research is that mixed-methods research is gaining popularity in other fields but remains scarce in the entrepreneurial domain (Molina-Azorín et al, 2012). Furthermore, previous studies in entrepreneurship research sparingly outlined the process of transitioning from qualitative to quantitative studies (Camarero Izquierdo et al, 2008; Carter et al, 2007; Desa 2012; Dewald et al, 2007; Murnieks et al, 2016). Therefore this study suggested seven detailed and iterative transitional steps: finalize qualitative results; formulate hypotheses or research questions; convert code families (categories) into variables; change codes into measurement items; construct the survey questionnaire; pilot test the questionnaire; and revise the questionnaire. Some of these steps were similar to those of Crede and Borrego (2013) in their study of examining the retention of graduate engineering students.

Implications for practise. The questionnaire developed in this study can be used by training institutions as a framework to teach skills in entrepreneurship courses. Further, the tool can be used to assess the level and kind of skills that entrepreneurs have before and after training. Having information about the skills

entrepreneurs need can be one way of ensuring that they learn the relevant skills to perform entrepreneurial tasks and be successful in their business venturing endeavours.

Implications for research methodology. The study suggests that entrepreneurship research can be expanded by the use of mixed-methods research. Scholars can adapt the conversion procedure illustratively used in this study when designing questionnaires in sequential exploratory mixed-methods research. This conversion process is not exclusive to entrepreneurship but can be equally well applied in other fields of inquiry.

Implications for entrepreneurship scholarship. The survey instrument can be used by scholars to further entrepreneurship skills research. Such future studies can focus on testing the instrument in different contexts and with larger populations so as to develop robust categories and measurement items.

Research instrument. The entrepreneurship skills questionnaire is available and can be requested from the authors.

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# A Mixed Method Approach to Improve Employee Engagement

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**Abstract:** Employee engagement is currently a popular research construct. An aspect which has not yet been addressed through research is the role of cultural sensitivity to improve employee engagement. This research focused on the improvement of employee engagement through cultural sensitivity, collaboration, the inclusion of all voices and the use of local knowledge. A mixed method approach was followed to improve employee engagement in a South African business environment. A validated employee engagement questionnaire was used to measure employee engagement in a South African organisation. A total of 1 041 employees of a poultry organisation, of all race groups, participated in the research. Most respondents (84.6%) were African. After analysing the results and providing feedback to management, an interactive process was used firstly to provide feedback to employees, secondly to involve them in the process of understanding the survey results and lastly to engage participants in the process of defining possible solutions to the identified issues. The four phases of focus groups, namely problem identification, planning, implementation, and analysis and reporting were employed. The strategies of trustworthiness, credibility, transferability, dependability and cultural sensitivity were applied in the qualitative research. Qualified facilitators with knowledge of local languages and culture facilitated the focus groups. Twenty focus groups were conducted, involving 204 employees. The results of the focus groups were analysed by means of content analysis and integrated in a document which highlighted developmental aspects, reasons for them being a challenge and possible solutions. This was presented to management and the solutions were subsequently implemented. The factor analysis indicates that an adapted questionnaire should be used in future research in this environment. A number of questions from the original questionnaire were not suitable for this population. The methodology applied firstly led to an adapted employee engagement survey and secondly to recommendations based on the inputs from employees of all levels and cultural groups. The process not only led to well-defined solutions, but also incorporated the 'voice' of employees in a collaborative process, using informal organisational knowledge.

**Keywords:** employee engagement, cultural sensitivity, focus groups, collaborative approach.

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## 1. Introduction

Engagement, employee engagement and work engagement are constructs which are gaining momentum as managerial tools to enhance employee commitment and satisfaction and to create a positive psychological climate for employees (Martins, 2016). A number of measuring instruments have been developed and validated to measure these constructs. According to Gallant and Martins (2018), it is important for organisations to take cognisance of how particular socio-demographic variables influence employee engagement and the subsequent organisational commitment, job performance and motivation. Understanding how different employees are engaged enables organisations to customise their engagement programmes to meet the needs of the various types of employees within the organisation instead of applying a "one size fits all" approach to engagement programmes. Practitioners define employee engagement as emotional and intellectual commitment to the organisation or the discretionary effort exhibited by employee in their work roles (Moshoeu, 2016). Research by Vijoer (2016) has indicated that African dynamics can easily be misinterpreted, she explains that organisations that extend their footprint into the diverse African continent must realise that different thinking structures are at play in Africa. In an engagement study in a South African bus company many of the meta-insights gained after the implementation of a co-determination study was aspects such as: engagement and inclusivity; participation in strategy translation; leadership should walk the talk, leadership understanding the human niches in the system and translate everything accordingly; investing in scientific developed psychometrics and the understanding that the return on investment in soft-skill development and engagement has a direct impact on the bottom line and is clearly demonstrated in increase in production and cost saving and strike prevention (Viljoen, 2016).

With this as background, an engagement project was launched in a South African organisation.

## 2. The project

A research project was undertaken to determine the reliability and factorial validity of a newly developed measurement scale, measuring employee engagement at individual and organisational level in a South African context and specifically a poultry producer (Steyn, 2016). The results of the study indicate that the instrument

used was valid and reliable for the poultry producer. A limitation of the study was the small number of African participants (11.4%) and particularly those in farm and plant operations (12.8%). It was noted that the majority of the participants were white employees and 86.3% were either managerial staff, administrative staff or in professional jobs. It was evident from the results that the lower ranked employees who participated were less engaged than their senior counterparts. If the limitations described are taken into account, most of the employees who were excluded from the research were lower level employees (Steyn, 2016). With the limitations in mind, a second employee engagement project was launched in the same organisation in two divisions and the focus this time was on operational and farm employees.

### **3. Aims of the research**

The aims of the research were:

- To determine the validity and reliability of the instrument for a different sample of employees in the same company
- To determine the value of focus groups to verify the survey results and to develop action plans

### **4. Research methodology**

The validated instrument indicated above was also used in the second survey. The contents of the questionnaire were discussed with the management teams of the two divisions and it was decided to add some questions which focused on disciplinary procedures, discrimination, grievances and leadership. A total of 1 041 employees participated in the survey, 87.1% of whom were African. Trained facilitators assisted employees when needed to complete paper questionnaires as the questionnaire was compiled in English. After capturing the data in Excel and exporting the data to SPSS, a report was compiled and feedback was given to the management team. The management team indicated that they felt that some statements did not apply to the operational and farm staff. It was then decided to again validate the questionnaire for the organisation, and specifically for these two divisions, by means of a factor and item analysis and secondly to involve employees in feedback and action planning. A mixed method approach was applied to the project as explained by Creswell (2009, p14) "Sequential mixed methods procedures are those in which the researcher seeks to elaborate on or expand on the findings of one method with another method. This may involve beginning with a qualitative interview for exploratory purposes and following up with a quantitative, survey method with a large sample so that the researcher can generalize results to a population. Alternatively, the study may begin with a quantitative method in which a theory or concept is tested, followed by a qualitative method involving detailed exploration with a few cases or individuals". In this project the second alternative approach was followed. Firstly a quantitative survey was conducted followed by qualitative focus groups.

### **5. Results**

The results of the factor analysis and reliability analysis interestingly confirmed the perceptions of management, namely that some items did not apply to the farm and operational staff. Principal component analysis with varimax rotation was applied. The total variance explained by the eigenvalues was 61.4%. This percentage is above the criterion stated by Hair et al (2010), namely that a solution in the social sciences should account for 60% of the variance (or even less) as satisfactory. The Kaiser-Meyer-Olkin measure of sampling adequacy was 0.965, well above the recommended minimum value of 0.6 (Ismail & Yusof, 2010).

Bartlett's test of sphericity reached high statistical significance,  $p < .001$ , indicating that the correlation within the R-matrix was sufficiently different from zero to warrant factor analysis. The communalities of the retained variables indicated values above 0.50. According to Hair et al (2010), variables should generally have communalities of greater than 0.50 to be retained in the analysis. Communality values represent the amount of variance accounted for by the factor solution for each variable. Variables with high values are well represented in the common factor space, while variables with low values are not well represented. All the communality values were above 0.50 and sufficiently high to proceed with the rotation of the factor matrix.

Seven dimensions were postulated, all above the cut-off point of 0.50 and reliabilities of above 0.70 (Hair et al, 2010). The seven dimensions are listed below in Table 1:

**Table 1:** Employee engagement dimensions

Description	N of items	Cronbach's alpha	Mean
Employee satisfaction	9	0.88 9	3. 7 5
Leadership	8	0.89 1	3. 2 2
Immediate manager	8	0.92 7	3. 3 8
Grievances and discipline	6	0.85 2	3. 3 0
Team	10	0.86 9	3. 8 8
Employment equity	6	0.75 4	3. 5 1
Skills	2	0.77 5	4. 1 6

The dimensions can be summarised as follows:

**Employee satisfaction:** This dimension includes employee's perceptions about their commitment, if they enjoy their work, if they are proud to work for the organisation and if they will encourage their friends to work for the organisation.

**Leadership:** This dimension focuses on aspects such the communication of decisions, providing of strong leadership skills, giving employees a clear picture of the direction the organisation is heading and providing the necessary training.

**Immediate manager:** This dimension includes aspects such as trust in the immediate manager; if immediate manager inspires people and that if he/she does a good job at people management.

**Grievances and discipline:** This dimension focuses if grievances and disciplinary procedures are applied fairly and if employees understand the procedures pertaining to grievances and procedures.

**Team:** This dimension refers to cooperation: collective solving of problems, the ability to adapt to change; doing more than is expected; and represents engagement at team/unit level.

**Employment equity:** This dimension includes aspects such as equal treatment, discrimination, and the performance of all races in managerial and supervisory positions.

**Skills:** This dimension focuses the necessary knowledge and skills to perform jobs.

Typical statements that were excluded from the factor analysis are:

- At my work I am bursting with energy.
- In our organisation employees are encouraged to develop ideas to improve work procedures and methods.
- Initiative is encouraged in the organisation.
- Risk taking is encouraged in the organisation.
- My job challenges me to think about problems in new ways.

The above statements confirmed management's conviction that they did not expect their operational and farm staff to be innovative or to demonstrate initiative in their work or to take risks. The work environment is highly regulated and safety and health issues are major concerns in the poultry environment.

Given the above, the next phase was to involve employees in the process of validating the survey results and to involve them in action planning. The results of the statements that were excluded from the factor analysis were not included in the feedback sessions.

## **6. Research methodology for focus groups**

The four phases of focus groups were used in this project (Martins & Martins, 2015):

*The problem identification* phase involves the definition of the purpose of the focus group. In this case it was to involve employees in the feedback process to get a better understanding of the issues and the planning of future actions.

*The planning phase* is about the number of focus groups, types of participants to be invited, the venues, the facilitators and languages. It was subsequently decided to conduct focus groups in all plants and administrative departments. The groups would consist of 10-15 participants. Separate groups would be arranged for supervisors/managers and staff members. The time duration of 2 hours for each focus group was planned per session.

*The implementation phase* is about data collection and moderation during the focus groups. In total, 20 focus groups were conducted by trained facilitators and in the participants' home language. 204 employees participated in the 20 focus groups. It was decided to involve as many participants as possible to ensure representativeness and to obtain the voice of the employees. In line with the guidelines of Krueger (1998), two facilitators were used per group. Both could ask questions and listen to participants' comments. A key facilitator facilitated the group behaviour and the second facilitator took notes. As most of the groups consisted of African participants, the facilitators were selected according to the language preference of the various groups. These ensured that facilitators could conduct the sessions in the participants' own language and also ensure cultural sensitivity. Cultural sensitivity is knowing, that differences exist between cultures, but not assigning values to the differences (better or worse, right or wrong) (The Community Toolbox, 2018). The guidelines posed by Viljoen (2017) for data gathering in groups were also adhered to, to ensure cultural sensitivity. The following guidelines were applied:

- Questions need to be posed in participants' own language.
- The facilitator should ensure that everyone is at ease and has a clear understanding of the purpose of the group.
- Questions should be posed, and debates should be stimulated.
- Open-ended questions should be used.
- The facilitator should test for understanding or probe for details and the group conversations should focus on the task at hand.
- Everyone should be able to participate and have a voice, and the facilitator should be neutral at all times.
- If needed, time may be spent on culture-specific issues or specific issues in the organisational context.

The organisation also ensured that the focus groups adhered to ethical considerations similar to other social research projects (Viljoen, 2017). The participants were informed of the purpose of the focus groups, participation was voluntary and the anonymity and confidentiality of information and participants were assured. No organisation representatives from HR or management attended any of the focus group sessions.

During the setting of ground rules all the above was outlined and discussed, and how sensitive information would be dealt with was explained.

The final phase is the *analysis and reporting phase*. The comments were captured on flip charts and were typed, categorised, consolidated and analysed only after the focus groups.

### **6.1 Conducting the focus groups**

As mentioned, the purpose of the focus groups was to give feedback to employees on the survey results, verify the results and explore possible causes of and solutions to the challenges identified in the quantitative survey results.

The agenda for the focus groups was as follows:

1. Opening, welcome and introduction
2. Overview of the survey
3. Purpose of today's session
4. What are we going to do with the information?
5. What are we going to do today?
6. Ground rules
7. Results of the survey
8. Discussions
9. Closure

More specifically, point 3 focused on:

- Asking participants to confirm what was going well as well as developmental areas based on the survey results
- Deciding as a group which developmental areas to work on as identified in the survey
- Discussing the main issues/challenges and determining why they were challenges
- Discussing possible solutions and identifying what would solve the issue to make the organisation a better place to work and to improve employee engagement

The facilitators presented an overview of the survey results of the specific plant or section. Respondents were invited to ask questions as needed. During this phase participants were requested to comment on the survey results positive and developmental. The purpose being to ensure that the participants identify with the survey results. The purpose of the session and the ground rules were explained. The participants were divided into groups of 4 or 5, depending on their language preferences. Each group was provided with flip chart paper and pens. A scribe was also identified. The point 3 steps outlined above were then followed. The main issues were confirmed and participants were asked to discuss and then write down why they thought the aspect being discussed was an issue and to provide possible examples to explain their answers. The facilitators assisted as needed by explaining issues in the participants' own language or by asking probing questions to ensure that the issue was clearly identified and understood. The last step for each identified issue was then to discuss possible solutions to each issue, which the group had to write down. The facilitators again asked probing questions to understand the solutions and whether they made practical sense for the various environments.

As only 3 or 4 teams were selected, the facilitators ensured that all participants participated in the discussions and that the dominant voice in the groups did not influence others. Each group then presented the information they gathered to the larger team. The larger team was allowed to ask questions and offer their input and suggestions, the main idea being to obtain integrated input and consensus from everybody. These were lively discussions. Additional information was added or clarified as needed. As was the case with the smaller groups, the facilitators assisted and managed the process in the large group by listening to questions asked, asking probing questions, making notes and clarifying comments. In a number of instances the facilitators explained the issues and possible recommendations in more than one language. The focus groups sometimes took longer than the allocated 2 hours. The facilitators were very flexible to accommodate the groups but also ensured that no unnecessary time was wasted on irrelevant discussions. At the closure the participants were thanked for their participation and the next steps in the process were explained.

### **6.2 Data analysis**

After the focus groups all the information on the flip charts was typed up and then integrated into one document. The researchers aimed to ensure the quality of the data by means of credibility, transferability, reliability and confirmability (Esterhuizen, 2014). The reliability of the data refers to the extent to which the data from the study is consistent and stable over time and across different participants. It was noted that the same themes emerged, but with different interpretations, according to the participants environments.



introduction. However, this was not the case in the other business units. A decision was taken to run the same survey and engagement process in the other business units in 2019.

An important learning point is that not all measuring instruments fit all environments, not even in the same organisation. It therefore makes good sense to adapt and validate measuring instruments for various employee and population groups. This is in line with the findings of Meiring et al (2005) and Moerdyk (2009).

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# Mixed Methods Research Approach and Experimental Procedure for Measuring Human Factors in Cybersecurity Using Phishing Simulations

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**Abstract:** Cyberattacks have a growing effect on business management. Organisations are increasingly focusing on human factors - how to train and evaluate people to minimise potential losses. One of the most scalable and practical ways to measure the human factor is to conduct a phishing experiment. Phishing is a type of cyber-attack that uses socially engineered messages to persuade humans to perform certain actions for the attacker's benefit. There is considerable amount of literature on the topic of phishing - e.g. how it works and how to fight against it. However, there is not much discussion on the particular methods nor the specific process of conducting simulated phishing experiments. This paper suggests a mixed methods approach for conducting phishing experiments and describes the experimental procedure including various technological, ethical and legal aspects. The suggested approach is based on related academic work and practical experience in both public and private sector organisations. Multiple opportunities and challenges regarding phishing experiments are discussed, providing guidelines for future research.

**Keywords:** mixed method research, cybersecurity, experimental procedure, phishing, human factor

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## 1. Introduction

Phishing is a type of cyber-attack that uses socially engineered messages to persuade humans to perform certain actions for the attacker's benefit. It is a widespread and continuously evolving threat in cybersecurity forcing businesses to pay millions of dollars (Wardman 2016). To address the issue, security awareness campaigns and trainings are now being included into organisational security plans. For example, a reported 79% of companies in the US and 45% in the UK employ simulated phishing attacks to assess organisational susceptibility (Wombat Security, 2018).

Sending out a simulated phishing email might seem like a trivial task but should be carried out with much caution. There are multiple reports, where badly executed exercises lead to a situation where users do not click on any legitimate links anymore, or do not open any legitimate attachments at all anymore. This in turn leads to a loss of productivity and has a significant negative business impact. While multiple papers address different aspects of phishing, there is not much discussion on the particular methods nor the specific process of conducting simulated phishing experiments.

This paper describes a step-by-step process for carrying out a phishing campaign, starting from the general objectives and going through various legal, ethical and technical nuances. The legal context of European Union is used, where according to the General Data Protection Regulation (GDPR), non-compliance with personal data protection rules can entail severe business consequences for companies being subject to the regulations. A mixed methods approach is suggested for interpreting the results of the phishing experiment.

The described process is meant to be used as a guideline by any organisation that wants to carry out a phishing campaign, e.g. due to state imposed requirements on security or internal motivations for decreasing human factor vulnerabilities. The ideas presented in this paper have been collected and condensed from a series of academic papers, informal interviews with information security experts and experience from sending out around 500 simulated phishing emails targeting both private and public sector organisations, including many that are considered part of the critical information infrastructure.

The goal for this paper is not to provide a single, infallibly correct way for conducting phishing experiments, but to simulate a discussion within the community about the myriad of concerns and issues accompanying phishing experiments. We describe the phishing process from a viewpoint of a third party that is conducting a phishing test to an organisation. The process is very similar in the case where the organisation is conducting a phishing test internally, which is the preferred method of security evaluation, resources permitting.

## **2. Related Work**

A considerable amount of literature has been published on the detection of phishing. Khonji and Iraqi and Jones (2013) have done a literature survey on the detection of phishing attacks and they provide a definition of phishing also used in the current paper: "Phishing is a type of computer attack that communicates socially engineered messages to humans via electronic communication channels in order to persuade them to perform certain actions for the attacker's benefit".

Dou et al. (2017) have systematically analysed different ways for software-based web phishing detection. Hadnagy and Fincher (2015) describe several aspects about phishing including the psychological principles behind phishing and how to recognise a phishing email. Jakobsson and Myers (2007) were among the first to comprehensively study phishing, providing a framework for studying the attack and its countermeasures. Their study describes how phishing works and what should be the defence mechanisms but lacks guidance on the process of phishing itself.

Attacks targeting the human factor get around various technical defence measures and have been the most popular methods employed by malicious actors in recent years (Wombat Security, 2018). The methods also enjoy a high success rate, with approximately 10% of phishing attacks successfully deceiving the recipient into clicking on a link or opening an infected attachment (Siadati et al, 2017).

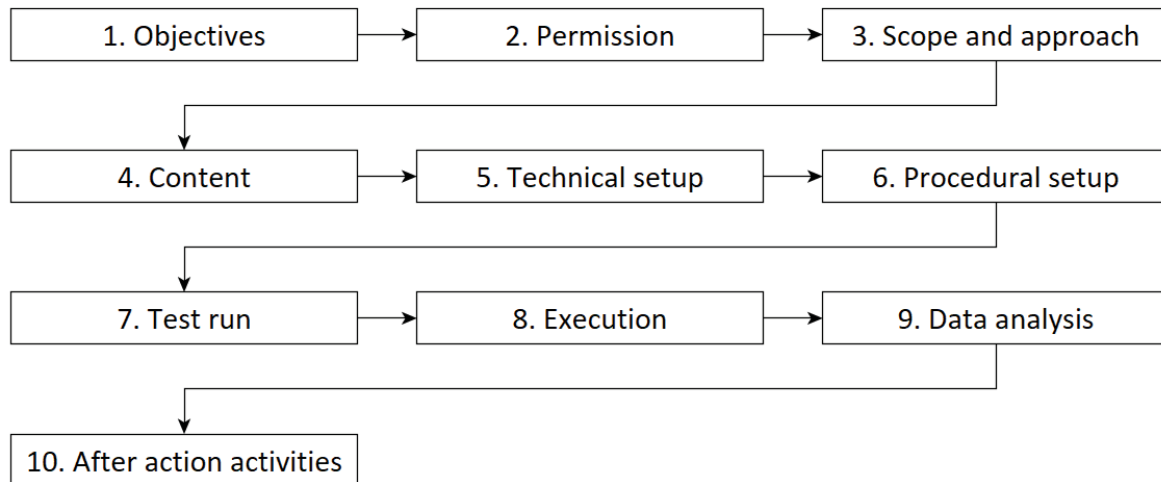
At the same time, significant concerns remain regarding the frequency with which training and assessment tools are being employed. More than a half of the organisations only test susceptibility on a quarterly or yearly basis (Wombat Security, 2018). What is more, the most underestimated aspect of security related trainings is their actual impact on and efficacy in changing human behaviour (MacEwan, 2017). For this reason, Caputo et al. (2014) highlight the need to collect qualitative feedback from the participants after the phishing experiment, e.g. conduct interviews with the participants to gain a better understanding of how people behave in phishing experiments and why.

On the question of ethics in phishing experiments, Finn and Jakobsson (2007) concluded that when ethical aspects are not considered important or when neglected entirely, phishing simulation participants may get a sense of victimisation or irritation. Several other studies exist, which have found ways how to solve the ethical issues and measure users who are vulnerable for phishing attacks without causing them any distress (Jagatic et al, 2007). Likewise, Salah El-Din (2012) focuses on describing ethics committees' researchers' and professional bodies' perspective on ethical views about deceptive phishing research. Most importantly, it is outlined that the use of deception in phishing research can be safe, if done correctly.

## **3. Proposed process**

In this chapter the general overview is given regarding the design and implementation process of a phishing campaign. We argue that in most situations it is essential to use mixed methods approach instead of just measuring whether a person is tricked by simulated phishing email or not. Mixed methods approach means that qualitative methods are used for analysing content and human reaction. Also, quantitative measures are used to measure the person's reaction to phishing email. It is beneficial to measure not only whether a person was tricked by the phishing email but also how the person reacted in general. For example, it is good to know how many people notified the IT support or other point of contact appointed by the organisation.

There are multiple descriptions of phishing process from the criminal's perspective, but the guidance for conducting legal simulated phishing campaigns tends to be very general. We have identified 10 steps (Figure 1) necessary for designing and conducting a successful phishing experiment. Each step of the process is then analysed more in detail in the following sections.



**Figure 1:** General process for conducting a successful phishing experiment

### 3.1 Step 1 – Objectives

Defining the objectives for a phishing test is the starting point for the design of the phishing campaign. Given the gravity of issues related to phishing experiments, the necessity and the expected benefits of conducting phishing evaluations must be well-articulated in each specific case to avoid unnecessary irritation to employees, or “training fatigue” (MacEwan, 2017). Under usual circumstances, the objectives are mainly related to evaluating the human factor of cybersecurity in an organisation – as it concerns susceptibility to the actions of external malicious actors – but there could be multiple reasons behind it, e.g. the objective can be to understand the training needs for the personnel as well as the current level of knowledge and experience of employees. Furthermore, the objective could also be to estimate the effectiveness of specific security training provided to the personnel previously or to comply with regulations (Hadnagy and Fincher, 2015).

As a rule, it is not recommended to conduct any phishing tests before every targeted employee has gone through security training or instruction. The only exception in this case would be doing the phishing test as an introduction just before a planned security training, to make things more “real” for the employees in subsequent instruction, and as a baseline for assessing the effectiveness of subsequent security training. It is of paramount importance to avoid any blaming or shaming based on the results of the test. Many researchers have shown that fear is an ineffective tactic to motivate security-related behavioural change (Bada and Sasse and Nurse, 2015). People should not be punished based on the experiment, but rather given a detailed explanation, and/or the opportunity to attend extra training or read additional materials about the topic of secure behaviour.

An important aspect to note when considering the creation, changing or amendment of organisational security policies, is that requests for compliance are more likely to be followed if they are perceived as fair, consistent and legitimate (Wortley, 2013). It is therefore necessary that figures of authority within an organisation make sure all such changes are promptly and adequately communicated to the members of the organisation. Only then would subsequent qualitative feedback benefit further amendments or adjustments to internal policy rules.

### 3.2 Step 2 – Permission

This section discusses several legal requirements for conducting a lawful phishing experiment. Before researchers or security testers can perform a phishing experiment, it is crucial to obtain proper written permission from the management of the targeted organisation.

Obtaining proper, and sufficient, permissions cannot be overemphasised regarding any types of phishing experiments or evaluations, as these have deception at their core. Permissions are the thin line between a well-intended phishing evaluation beneficial for organisational security and a malicious, or unidentified, “in-the-wild” phishing campaign. From the perspective of penetration testers, security auditors or other type of researchers external to the organisation, no-permission phishing is usually illegal. Even if the activity would not

be subject to criminal liability, then it is without a doubt subject to personal data protection safeguards, since data on specific email accounts will be collected in each case. A proper permission means a written and signed document obtained from the person or body, e.g. the board, invested with the according authority. If the chief technology officer or head of security has been authorised to make such decisions personally, then not only this permission should be sought, but also a clarification letter that expresses the limits of his/her responsibility.

Signing a non-disclosure agreement with the specific company is crucial, allowing for a quid pro quo approach that serves both research interests and provides useful information to the organisation about their security needs. In general, this step of the process will also shed light on how the security related decision-making is operationalised within the organisation, e.g. how much freedom is given to the security personnel to conduct necessary vulnerability testing as well as what permissions are needed and whether legal counsel is available.

It is a common practice to have written permission and non-disclosure agreement between the organisation and the external party providing the phishing simulation. However, there is anecdotal evidence showing that having official written permission is less common for an internally organised phishing test.

### **3.3 Step 3 – Scope and approach**

In the step 3, the target audience for the experiment should be determined. Also, a general approach and timeline should be set.

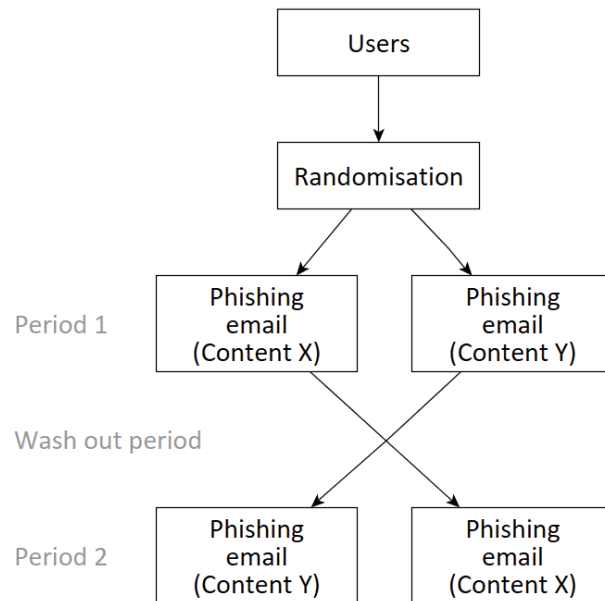
#### *3.3.1 Selecting the sample group*

Once the larger objectives have been set and permissions granted, then it is time to define the scope of the experiment. Based on the objectives, a reasonable scope should be determined. Usually, it is not feasible to send the phishing email to every member of the organisation. Also, it is meaningless to send the phishing email to people who are on holidays or otherwise not expected to read their email.

In some organisations, it makes sense to divide people into groups based on their job description. There could be different target groups such as management, computer specialists etc. It is better to choose those people who are trained and informed that a phishing experiment may take place. Also, in case of international organisations, legal jurisdictions should be considered. For example, a written permission to perform a phishing experiment in a local branch of the organisation might not cover some employees that are officially part of another branch of the organisation or otherwise hired under different conditions.

#### *3.3.2 Timeline and general process*

Phishing could be done as a one-time experiment or a part of an ongoing series. The sample group can be divided into two or more subgroups to receive phishing email with different content (crossover trial). That approach enables to better understand the impact of the phishing email content to the user's reaction. The crossover trial approach is illustrated in Figure 2.



**Figure 2:** Crossover design for phishing email content to better understand the impact of different types of content

### 3.3.3 Selecting phishing type

There are numerous types of phishing attacks. For example, Chiew and Yong and Tan (2018) have mentioned 20 different types. The main actions that the targeted person is expected to perform are the following:

- visit a website (e.g., to be infected by malware or to enter personal information);
- reply to the email (e.g., to provide personal or otherwise sensitive information);
- open the attached file (e.g., to be infected by malware);
- transfer money (e.g., react to a fake invoice or blackmail scam).

When simulating a phishing attack, a suitable attack vector must be selected. Usually it is legally questionable and impractical to ask people to transfer money. Based on our experience, people are not easy to convince to give up sensitive information by email reply either.

Sending an attached file by email and measuring the user behaviour can be quite realistic simulation but also technically challenging. It is difficult to create a simulated malware that would pass any potential anti-virus checks, work on different operating systems (Linux, Windows, macOS, etc), and be legal to distribute. If the custom-made email attachments fail for any technical reason (not due secure behaviour decision of the employee), then the reported opening rate could be seriously biased.

Inviting targeted users to visit a website is a convenient attack method for measuring the response. Nevertheless, it also contains multiple design choices. The hyperlink in the phishing email could lead to either a so-called meaningless site (website is blank, redirects to some other site, displays an error or an infinite loading message), seemingly legitimate site (an existing company or a fictional site) or information about the experiment together with optional guidance for further action (e.g., security policy or training materials).

Copying a legitimate website (such as Gmail login form) is strongly discouraged without the explicit permission from the site owner. Showing information about the experiment is a good way to avoid potential confusion and overreacting but at the same time it does not allow to measure how many people would report the phishing site after clicking the link.

Selection of the phishing type influences the content of that phishing email. More about that in the next section.

### **3.4 Step 4 – Content**

The main requirements for the content of the phishing email are for it to be not offensive (no threats, insults etc) and to contain multiple suspicious characteristics that would allow the receiver to decide that it is a phishing email.

Hadnagy and Fincher (2015) have described different difficulty levels for phishing emails. In our experiments, we used two different email contents for each experiment (Figure 2). One content was more suspicious and the other was less suspicious and therefore more difficult to recognise as phishing. If difficulty level of the phishing email is very high (almost authentic email), then it is difficult for ordinary users to understand what they did wrong and as a result they might become overly cautious (not clicking on links in legitimate emails) or experience security “fatigue” and decrease their focus on security behaviour (MacEwan, 2017). Characteristic mistakes in the phishing email enables to better educate users afterwards, showing them the specific signs that the received email was fraudulent.

### **3.5 Step 5 – Technical setup**

The technical setup is largely influenced on the selected phishing type (step 3). It covers technical design choices for optimally sending out phishing emails and measuring the click rate.

One of the first technical questions that needs an answer is whether to buy the appropriate service or to set up an inhouse environment for sending phishing email campaigns. It is assumed that the phishing campaign will be conducted legally, therefore intentional use of illegal or questionably legal services, such as Phishing as a Service platforms in the dark web (Li et al, 2013), is out of the scope. There are many organisations that provide legal phishing as a service, e.g. Nexigen, KnowBe4, Guardian360, Cofense to name a few. (Authors of this paper do not have any affiliation with any of the companies mentioned.) Using an external service to manage the email sending part or the whole phishing process helps to simplify things for the end user and lessen the administrative overhead. The main downside is the lack of control over the experiment and the received data. The current paper is mostly targeted to those situations where the phishing as a service is not used.

Fincher and Hadnagy (2015) have compared different software platforms for phishing experiments. There are various open-source and commercial platforms available. In our case, we have used open-source solutions. Available open-source solutions include, e.g., Gophish, King Phisher, and Phishing Frenzy. They generally require some effort to get the system up and running but provide more granular control over the process. In our case study the deciding factor was privacy. In our experience, none of the targeted organisations did agree to take any chances for leaking their sensitive data (employee email addresses and phishing campaign results).

Therefore, we decided to choose one of the open source platforms and run it in our own server (belonging to the university) and special attention was put to storing the gathered information securely (e.g., disconnecting the phishing server from the Internet after the data gathering is complete).

To minimise any potential technical issues on measuring the click rate, additional data measurement points can be used (e.g., storing the network traffic with tcpdump).

### **3.6 Step 6 – Procedural setup**

Procedural setup phase focuses on informing all the concerned parties. In our case we used university server for sending out emails and hosting the landing page. We also used domain name registrar to redirect the custom web address to our university server. Therefore, we had to inform the IT department of university (people responsible for incident handling and security monitoring) and the domain name registrar about the planned phishing experiment. We also informed the national computer emergency response team (CERT) and the point of contact in the targeted organisation.

Keeping relevant people informed avoids potential overreaction. For example, CERT can rest assured that it is a simulated attack, not an actual emergency. In our case, the mentioned parties got precise information about the planned time for the phishing experiment and the exact content of the phishing emails.

Additionally, the point of contact in the targeted organisation kept track on all the relevant reports by the employees noticing a suspicious email. As also emphasised by Hadnagy and Fincher (2015), it is essential to gather data on incident reporting.

Another discussion point is whether to notify employees beforehand or not. Fully notifying people beforehand causes bias in the results, since people tend to be more attentive, if they possess specific prior warning as well as knowledge of ongoing monitoring regarding their activities and reactions. However, the opposite solution of complete deception is wrought with ethical, and potentially legal problems. Based on our observations, a prior warning multiple weeks (or even months) in advance does not cause significant bias.

### **3.7 Step 7 – Test run**

No matter, how good is the plan, there is often some technical detail that is overlooked. That's why it is essential to conduct a test run before the actual phishing campaign starts. We recommend conducting the test run at least one day in advance, so that there is still time to fix some minor technical issues or to postpone the main campaign in case of bigger difficulties. Test run should ideally be conducted using an actual email address of one informed employee of the organisation.

### **3.8 Step 8 – Execution**

After careful planning and testing, it is time to execute the campaign. In our case, it included sending additional notifications to national CERT and target organisation just before the start of the experiment. Then we sent out the phishing emails with two different types of content according to the crossover trial approach (Figure 2). Emails were sent usually around 1 PM and contained personal link to a website showing an error "Page not found". Around 4 PM another email was sent to targeted employees by the information security responsible in that organisation. That email explained that a phishing experiment took place and provided additional information about correct security behaviour.

### **3.9 Step 9 – Data gathering and analysis**

Visits to the website mentioned in the phishing email were recorded. As targeted people were given personalised links (in the format of [www.example.com/?c28da2](http://www.example.com/?c28da2), where "c28da2" was personal identifier), then people clicking on those links could be determined. Some people did not use the personalised link, but instead the main website ([www.example.com](http://www.example.com)). Their visits were logged but could not be connected with their identity.

Additionally, all the reports to the targeted organisation's security team were logged and later analysed to see whether the reporting person had already clicked on the phishing link or not. As a general trend, we observed around 10% click rate related to simpler (more obviously fake) emails and around 20% click rate with the more sophisticated (less obviously fake) emails. Although those findings are well aligned with other phishing research, e.g., Siadati et al. (2017), it must be understood that some special cases might not be interpreted correctly. For example, it could be argued that if an advanced computer user uses proper security measures (e.g., dedicated sandbox computer with activated security plugins such as NoScript), then just visiting a website is not very risky. Nevertheless, it would be expected that this advanced computer user reports the suspicious email.

As for the reporting, we have observed massive underreporting. Around 75% of the people who did not click on the phishing link also did not report it. That shows that there is a big chance of a more targeted phishing attack to go unnoticed by the security team even if some targeted people understand that they have been targeted. Therefore, it is important to measure reporting to get an overall understanding about how people behave after getting a suspicious email.

Interviewing some phishing experiment targets helps to interpret the results and is highly recommended. We selected interview participants based on their reaction (clicking on the phishing link and reporting suspicious email). Quasi-structured interviews explained, for example, why some phishing content was less successful (unknown sender, unrelated to work) and why there was a lack of reporting (not finding it urgent, not knowing reporting processes). Interviewed people confirmed the need of keeping the content of the simulated phishing emails not threatening nor offensive. This resonates well with the suggestions by Finn and Jakobsson (2007).

### 3.10 Step 10 – After action activities

The last step of the phishing exercise is to tie up any loose ends. The main focus in this phase is usually on delivering a report covering the results and analysis of the experiment. It would be good to also emphasise in the report that the targeted people should not be punished in any way. The report should provide a good basis for the organisation management or other decision makers to take the next steps to improve their security levels.

A careful debrief with the targeted employees helps them better understand why this experiment was needed and avoids damaging the trust between them and the management. The exercise should be treated as an input for considering the general training needs of the personnel. While victimisation is hopefully avoided, there should still be enough resources ready to handle potential misunderstandings. People can understand emails differently and react in various unexpected ways. In the worst-case scenario, even measures such as psychological counselling might have to be considered. Although such extreme reactions might be rare, it still is possible that several employees are left confused after the experiment and require further information (in addition to the explanatory email that is sent in the end of the phishing experiment). Therefore, it would be a good idea to offer employees an opportunity for an individual debrief explaining the aims of the experiment and addressing any potential misunderstandings or concerns they might have.

In the end, it is recommended, and in many contexts legally required, to securely delete any sensitive data that was gathered during the exercise or save the data in an anonymised form.

## 4. Conclusions

Conducting a phishing campaign is a relatively easy and well scalable way to get some insights into the current security posture of an organisation. While the process of sending an email to the employees might seem quite straightforward at first, the process has numerous details that are important to notice, but easy to miss. Overlooking some of those design choices, e.g. the legal implications and policy environment, might severely backlash the good intention.

Also, the analysis of the results should be done with caution. This paper described how to use a mixed method approach where after sending simulated phishing emails to employees, quasi-structured interviews were held with a selection of targeted people. Qualitative side of the experiment helps to better interpret the quantitative results. This paper is intended to initiate a more in-depth academic discussion within the community on how to conduct awareness trainings that are positive and address the real threats.

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# Linking Business and Academic Research: A South African Case Study

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**Abstract:** The need for academic research linked to business demands exists to provide authentic information. This paper explores the South African needs of business to understand skills development from an academic perspective. A large corporate body has engaged in a project to upskill unemployed South Africans, and the efficacy of the project is explored through an independent research organization and the evaluation thereof. The challenges of research are to provide quality academic research which is validated through peer review and publication, while providing data from business which is sometimes challenged as not being relevant without links to theoretical research. As noted by various academics, "Academic entrepreneurs or entrepreneurial academics" (Meyer, 2002) the purpose of the research is open to scrutiny. Similarly, Gibb (2000) provided research "SME Policy, Academic Research and the Growth of Ignorance, Mythical Concepts, Myths, Assumptions, Rituals and Confusions," noting the way in which research can be used for, amongst a number of things, the process of confusion and assumptions for alternative purposes. The focus on business versus academic needs is considered with a case study. The paper does not challenge business versus academic needs, but provides an evaluation of a national research initiative which has been implemented. Using the research plan for the initiative as well as the different focal points and research presented at conferences and later publications, the need for research linked to business needs and academic needs is evaluated.

**Keywords:** business research, research authenticity, alternative research

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## 1. Introduction

The need for research is ongoing and the various methods and purposes help to validate a special need, with an associated agenda. The need for academic research linked to business demands exists to provide 'authentic' information, as long as it is validated against research methodology that is sound and authentic.

The stakeholders involved in research are carefully classified, and if research is generated by an organisation on itself, then the concept of "insider research" is associated with it (Coghlan & Brannick, 2010, pg. 60):

Insider research typically is seen as problematic, and indeed, frequently is disqualified because it is perceived not to conform to standards of intellectual rigor because insider researchers have a personal stake and substantive emotional investment.

This term exists even when research is done by a separate entity on an organisation in a continuous manner, as will be explored in this paper.

This paper explores the link between a national research initiative documented by an academic organisation versus the business needs of the organisation requesting the research as well as the various challenges and complications that arise in ensuring the research is validated systematically, while not creating a subjective focus based on business interests. The purpose of this is not to delegitimise a business need or be critical of it, but to define the process of sharing academic requirements that require some authentic methodology and authenticity in the research. The focus is on the two perspectives of the academic institution and the business-based organisation and the influences of both on documenting the national research project.

## 2. Literature Review

### 2.1 Academic Entrepreneurship vs Academic Relevance

The idea of academic entrepreneurship is explored by researchers (Siegel & Wright, 2015), "[b]roadening of the stakeholders involved increases the complexity of formulating and implementing strategies for academic entrepreneurship" (p.22). The South African needs of business to understand skills development from an

academic perspective, and the challenges that exist based on the 'agenda' of business needs is determined when organisations work together to explore research that is beneficial to both parties including the recognition of entrepreneurial opportunity.

As noted by various academics, "Academic entrepreneurs or entrepreneurial academics" (Meyer, 2002) the purpose of the research is open to scrutiny. Similarly, Gibb (2000) provided research "SME Policy, Academic Research and the Growth of Ignorance, Mythical Concepts, Myths, Assumptions, Rituals and Confusions," noting the way in which research can be used for, amongst a number of things, the process of confusion and assumptions for alternative purposes.

Research exists on business, new venture and the need to evaluate region, city, country and continent specific business needs. More specifically, the "[r]esearch in international business has focused most often on established, large multinational companies, and entrepreneurship researchers have focused primarily on venture creation and the management of small and medium-sized businesses within the domestic context" (McDougall & Oviatt, 2000, p. 902).

Furthermore, there is a criticism by recent researchers on how research from academic institutions, specifically the business school generated kind "has limited impact on business practitioners, and therefore, makes very little contribution to improving the world we live in" (Fraser, Deng & Bruno, 2018, p.11).

In addition, programmes such as the one in this paper, provide much needed experience which is a desired precursor for those wishing to do an MBA.

## **2.2 African vs International Business Research**

What is positive is the focus of research on business in which the relationship in Africa specifically is documented. The research of Kolk & Rivera-Santos (2018) note, "[i]n terms of topics covered, the analysis reveals a strong prevalence of business and society-related research. Although the characteristics of the African context seem particularly well-suited for this type of research, this prevalence also points to important avenues for future research in other themes" (p. 427). The focus of research on a specific continent is helpful and develops contextual needs of a sector. Furthermore, as cultures and their traditions and habits vary in locales across smaller locations such as countries and provinces, there is an almost infinite need for research on ever more specific contexts.

Although there is research which has been conducted on the link between international and national research in business, in the focal areas of international versus national research, the methodology used for the application of the project looked to international benchmarks of best practice. There is a need for national research to be done by countries, as each country has its specific needs based on its economy. South Africa is a good example of this, where new venture creation is noted as an opportunity to provide revenue to unemployed people and qualifications have been developed to provide learning such as the qualification, The National Certificate: New Venture Creation (<http://allqs.saqa.org.za/showQualification.php?id=49648>).

The challenges of research are to provide quality academic research which is validated through peer review and publication, while providing data from business which is sometimes challenged as not being relevant without links to theoretical research, "in an era of rapidly accelerating globalisation of higher education, the peer-reviewed journal—whether print-based or electronic—becomes a key site where this identity is performed and recognised worldwide (Lee & Boud, 2003, p.4).

## **2.3 Conclusion**

The need for authentic research, which is beneficial to both academia and business means that there needs to be advancement of the body of knowledge. "Universities can probably stay in the core of the knowledge sector mainly by retaining their unique research and education missions, a comparative advantage, perhaps enhanced further when linked to research and practice of economic development (Laukkanen, 2003, p.381).

## **3. Research Methodology**

The first part of the study involved a literature review designed to locate various aspects of research as linked to the idea of the entrepreneur, and research the dynamic in which these 'academic entrepreneurs' operate,

as well as identifying the effects that these dynamics have on them. This formed the foundation of ensuring challenges and opportunities noted nationally and internationally were considered when collecting data.

In order to help understand and evaluate the project held nationally in South Africa, interviews with a small number of researchers (four in total), which form part of an academic research based institution, as well as the project managers and senior management (twelve in total) of a national educational institution, in various spheres of research needs and requirements were determined. Initially, the research was designed to be quantitative, however, some respondents supplied qualitative insights of which some are noted in this paper.

In order to determine the efficacy of the Retail Readiness Programme (RRP) from a store perspective Retail Store Managers, who participated in the research are noted as respondents, from 39 stores linked to the RRP completed a survey on the efficacy of the Retail Readiness Programme from an evaluation of the learners' role as effective employees.

Research conducted on the project was evaluated and the focal areas, including the purpose of the research and the forms of presentations and publications evaluated versus the initial project findings of the project. The way this was done was using the research plan for the initiative as well as the different focal points and research presented at conferences and later publications, the need for research linked to business needs and academic needs is evaluated.

The findings were then documented according to the model used by the organisation:

- Initiation of the project,
- workplace engagement, and
- Research initiated post project initiation

## **4. Initial Findings**

### **4.1 Initiation of the project**

The initiation of the project considered the exploration of a learning model which could help to provide potential retail entrepreneurs with opportunities to open new business ventures or work with a large retail initiative, named the Retail Readiness Programme (RRP). The intellectual property of the project was considered critical and the challenges noted from the organisation was not to share it with researchers, and to ensure that it remained controlled. The research team had to consider how to ensure authenticity, while still validating that the model could be implemented and that academics could evaluate the potential efficacy thereof. In order to do this, the research team was given the model based on the proviso that it would be presented at a conference, peer reviewed as part of the conference proceedings evaluation of quality research, but the publication would be limited until the project was initiated. The compromise between the research team and the organisation initiating the project was helpful and the research team noted learning the need for business to remain confidential in order for funding to be initiated and the challenges of intellectual property being compromised.

The model (Moldenhauer et al, 2017), which considers the change from 'retail employment', an act, to entrepreneurial retail readiness a provision of skills to note that the retail industry is entrepreneurial and skills and retail readiness provide opportunities for potential staff to understand the skill requirements of the retail sector, but more importantly to understand and explore opportunities of entrepreneurship in the retail sector beyond the entry level position offered. This directly shares the understanding of retail leadership and values and requirements thereof through completion of a skills programme on starting your own business, the role of what a business must meet in terms of success planning and the key requirements needed to ensure sustainability of the business.

This 8-week learning programme has resulted in learners having the opportunity to understand requirements of the retail sector, linked to learning outcomes. The methodology of the programme was developed based on adult learning needs in the workplace (Kenner & Weinerman, 2011) and research has been done on the efficacy of it through ongoing evaluation of its effectiveness in a longevity study of the programme which is summarised here.

The model of employability of learners into the sector ensures the transition from large turnover of staff, which plagues the sector, through data available which considers 'how many days do they stay employed'

contrasting direct employment versus the retail readiness programme. Furthermore, the economic generation of the unemployed that then becomes the potential new buyer through low income access is as a result of movement in and towards the workplace. For those that wish to start and create their own success, the retail readiness of owning a company is understood as a basis of working for others to ensure the stakeholder participation is the benchmark for succession planning.

The researchers who documented the process noted that there was not a desire not to share the model, but the intellectual property challenges required a compromise in how information was published, resulting in a publication 12 months after the project was initiated.

#### **4.2 Workplace engagement**

In order to determine the efficacy of the Retail Readiness Programme from a store perspective, Retail Store Managers who participated in the research are noted as respondents. Managers from 39 stores linked to the RRP completed a survey on the efficacy of the Retail Readiness Programme from an evaluation of the learners' role as effective employees. 85% of respondents felt that the learners added value to their store, with 10% feeling that they provided basic services and only 5% claimed that there was limited value. Respondents also had the opportunity to select that no value was provided to the store, but none selected this option.

Linking the learning programme which trains retail readiness from a responsibility and customer service engagement perspective, 97% of respondents felt that the RRP was in line with store requirements in dealing with customers and staff and only 3% felt that it wasn't. This indicates that learners complete in store training through the coaching programme which helps to evaluate the effectiveness of retail readiness over the 5 weeks of the in-store phase of the learning programme.

In addition to this, the level of commitment to dealing with store goals was evaluated and 72% of respondents indicated that the learners from the RRP were committed to making a difference. 21% of respondents felt there was a basic commitment to their store while 8% noted a limited commitment to the store. Although there was an option for no commitment, no respondents selected this. This reflects the learning programme coaching which evaluates commitment to a project (in this case a store) and the efficacy thereof.

In findings about the impact of an RRP learner to a store in terms of attitude, specifically a positive one which adds a meaningful difference to the store, 100% (all respondents) agreed that the behaviour of learners matched this. This reflects that in addition to efficacy of store-based processes, attitudes are noted as part of the programme, and the attitudes contained herein were all noted as being positive. This is also reflected in the employability of RRP learners. 97% of respondents would use RRP learners to fulfil vacancies, while only 3% said they would not. This indicates that the efficacy of the programme, its values, its delivery of understanding store-based systems, best practice, and standard operating procedures are in line with the actual stores and that the learning programme meets requirements.

#### **4.3 Research initiated post-project implementation**

Through presentation at various conferences, feedback provided by those attending noted the need to pursue research beyond the initial project but also to consider role-players' feedback about their experiences and the role of corporate social responsibility in encouraging learning and the need to understand the learning requirements of current high school students who will be the employed of the future.

Research conducted resulted in the development of three areas of research papers being presented at conferences:

- Best Practice Focused Occupationally-Directed Education, Training and Development Practice Prospects Linked to Workplace E-learning.
- Corporate Social Responsibility – Redefining Ethical Leadership and the 'Human Element' in the King Report
- Academic Leadership Challenges- ensuring relevance in the work integrated learning space

The researchers noted the need to share the feedback at the various conferences with the project management team to indicate that there was ongoing interest in the project. The business focus tended to share the success of the project, whereas the research team tended to look at the impact of the project. The feedback provided through interviews noted the need to validate the purpose of the research from an

academic perspective, based on feedback provided in the review process by the blind peer review of academic works. This information sharing initiative helped to authenticate the need to ensure valid research, linked to a quality assurance initiative.

## **5. Recommendations**

The evaluation of the process which includes the success of the programme based on learner achievements is not sufficient as it does not consider the model used, nor does it focus on the engagement between the various role-players that partake in the process. It is the validation of research and the feedback provided on the quality of the research that helps to validate the process.

The following recommendations form the basis of the evaluation of research conducted throughout a national project:

- Provide all role-players, including researchers, with the model to be used in a project to ensure sufficient understanding of the engagement on the project, as well as the requirements and roles and responsibilities of role-players in the collection of valid data and associated models for developing authentic research.
- Ensure quality assurance models linked to research which considers both the theoretical and practical component of implementation of the project.
- Provide quality assurance practices linked to research projects and models, ensuring all stakeholders validate their participation based on standards linked to research.
- Ensure engagement with all stakeholders at the various institutions linked to the research project to ensure that quality assurance practice is correctly implemented, documented and evaluated accordingly.

## **6. Conclusion**

From this research, the project produces data that reflects the impact that workplace-based learning offers from initiation of the project through the evaluation of the research conducted on the model, to first implementation and evaluation of store owners, to projects run from a research perspective that still helped to share information about the project.

These findings have been shared academically in various conferences to date, in which the methodology has been published as best practice models for workplace readiness programmes.

In addition to this, the relationships with the workplace and partners needs to be in place and are noted, and the various levels of quality shared through information sessions to ensure that all stakeholders see the value of the process and that the research that is produced is not focused on business only needs but rather the opportunity to share research that is quality assured and validated.

The feedback suggests that while businesses perceive upskilling as one that has a positive effect, the data gathered adds to an academic foundation from which further data can be added through similar exercises.

Research associated quality assurance and work integrated learning are interconnected. Without the delivery of quality research, the overall research initiative is not successful. The validation of the project comes from independence of the research organisation in conducting the research and documenting its findings which are quality assured through peer review. This validation ensures that the research is authentic and that the publication is open for further review. Business focused research is therefore validated through these means, as any subjective initiatives are quality assured and there is no purpose for subjective publication.

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# Application of PLS-SEM for Small Scale Survey: An Empirical Example of SMEs

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**Abstract:** Recent developments in Structural Equation Modelling (SEM) have been claimed to add some sophistication onto quantitative research methods' usage in terms of their research versatility, efficiency and practicality in a range of disciplines including Information Systems, Marketing, and People Management research. Although covariance based SEM (CB-SEM) is most prominent, application of partial least square structural equation modelling (PLS-SEM) is an attractive alternative. This paper examines and applies the characteristics of PLS-SEM onto SMEs to see whether the efficiency, practicality and versatility assumptions, as claimed, do actually contribute to SMEs' business entrepreneurship in practice. The research question is therefore 'Do the embedded PLS-SEM assumptions of research versatility, practicality and efficiency actually translate into practical reality in SMEs operating in an emerging economy context?' We used a quantitative method data analysis technique as a precursor to help us identify the types of challenges faced by SMEs at both the micro and macro levels of analysis. Primary survey data from 212 Bangladeshi SMEs located at various geographic districts provide the study's population. We assess the application of the technique as a research methodological tool and its limitations provided the basis for us to develop and validate a partial least square based structural equation model (PLS-SEM) as part of a small scale survey-based research on SMEs. These methodological insights then led to a successful framing of SMEs in a model that contributes to a process of identifying which types of challenges are more critical for SMEs' growth. Our results show that for SMEs to be competitive, the business and research benefits of our modelling and methodological technique should be given foreseeable attention by both academics and business practitioners. This methodological perspective is yet to gain researchers and professional practitioners' attention from SMEs' business perspective. By applying the statistical PLS technique to Business and Management Studies research we are contributing to a deeper understanding and knowledge creation in examining the assumptions, the design and application of a sophisticated research tool for the development of People Management, Business and SME theory and practice with a focus on an emerging economy.

**Keywords:** Methodology, Assumptions, SMEs, Challenges, PLS-SEM, emerging economy, research

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## 1. Introduction

Structural Equation Modelling (SEM) has become a benchmark standard in Business and Management research to investigate the cause-effect relationship between latent constructs (Hair et al 2011). Its proponents claim that SEM adds sophistication to the use of quantitative research methods especially in terms of how versatile, efficient and practical they are in studying a range of disciplines including Big Data Analytics, Marketing, Information Systems, Business and Human Resource Management, to name but a few (Akter et al 2017). However, to date, such sophistication has not been applied to a small scale survey-based research on SMEs in emerging economies. This paper examines and applies the characteristic assumptions of PLS-SEM onto SMEs to see whether the claims to efficiency, practicality and versatility do actually contribute to SMEs' business entrepreneurship in practice and thereby help to answer the paper's guiding question. The research question asked is therefore: 'Do the claimed PLS-SEM assumptions and benefits of research versatility, practicality and efficiency actually become translatable in the practical reality of SMEs operating in an emerging economy context? The advantages of why research-proponents have selected and justified their use of SEM over the decades are examined with greater analytical rigour in the ensuing section to ascertain their veracity and applicability. It is also attempted to discuss two related research methodology constructs, namely the suitability of PLS to modelling phenomena as well as component based SEM as these have been claimed to constitute fundamental characteristics to developing a model. In the case of this paper, such examination is crucial to find out what the practical drivers, barriers and impacts of internationalisation of SMEs in developing countries actually are. Combining both constructs has been found necessary as SEM studies have discussed the contribution of modelling but have not looked into component based SEM or PLS path modelling (Wetzels et al 2009). What has been attempted in this area remains predominantly conceptual as much emphasis is on the assumed notion that doing so renders such a research tool versatile in most situations and thereby efficient.



The extent to which the validation of the rigour of the assumed benefits has rendered PLS-SEM is yet to be studied in the development of research models and techniques and in small sample survey.

## **2. Literature on PLS-SEM**

Two types of SEM techniques namely CB-SEM and PLS-SEM have been identified as research methodological and analytical tools by Sewall Wright in the early 1920s and subsequently by Bollen, (1989) and Hair et al (2011). PLS-SEM, also known as component based or CB-SEM has been defined by a range of scholars as a tool that “focuses on estimating a set of model parameters” such that these are structurally “as close as possible to the empirical covariance matrix observed within the estimation sample” (Reinartz et al 2009, p. 332). Others think that CB-SEM as a generalization of path models, principle component analysis and factor analysis helps to connect several data tables in causal linkages (Rahman et al., 2017). However, PLS-SEM calculates latent variables by using PLS algorithm and then ordinary least square (OLS) is carried out on the latent variables to evaluate the structural equations. The variables are classified into several groups to develop structural equation as it is claimed that unlike CB-SEM, a PLS analysis does not work with latent variables but rather with a block of variables (Akter et al 2010). To date, the covariance based approach is the dominant paradigm in SEM methodological work as it helps to minimise the gap between the sample covariance and those anticipated to be developed using a model. Therefore, it is prudent to examine its component aspects as well as its methodological constraints to see the extent to which they apply in SME contexts using smaller sample sizes.

The constraints are mainly noticeable when one has a closer look at its assumptions enshrined in its distributional properties (multivariate normality), measurement level, sample size, model complexity, identification and factor indeterminacy (Fornell & Bookstein 1982). Likewise, it is noted by Shah and Goldstein (2006) that an average of 4.4 latent variables and a mean of 14 items per model are used in a review of 93 journal articles. Thus it indicates that the maximum likelihood (ML) is not able to develop a model with large number of latent variables and indicators with smaller sample size (Akter et al 2017; Rahman et al 2017). Most CB-SEM studies focus on one simple theoretical framework that does not permit the development of complex modelling using a multiplicity of analytical levels (Astrachan et al 2014). It has also been established that estimators were much more sensitive to the various potential deficiencies in data and in the model specification compared to the benefits of efficiency and practicality propounded (Hair et al 2011). Smaller sample sized studies have been noted to face greater restrictions on model development (Rahman et al 2017) as identifying the nuanced complexity of empirical phenomenon by using a small number of common factors becomes trickier (MacCallum, 2003). Blalock (1979, p. 881) believes that “reality is sufficiently complex that we will need theories that contain upward of fifty variables if we wish to disentangle the effects of numerous exogenous and endogeneous variables on the diversity of dependent variables that interest us” as supported by Akter et al. (2017).

Although PLS-SEM has been touted as the ‘silver bullet’ or universal remedy for dealing with a research challenge like smaller sample sizes (Hair et al 2011; Chin & Gopal 1995; Wetzels, et al 2009), we want to investigate, using the study’s empirical data, whether PLS-SEM is more suitable in developing complex models and achieving theoretical parsimony, accounting for measurement errors between relationships thereby improving the validation of theories as suggested by Noonan and Wold (1982) and their followers.

## **3. Core Assumptions**

The claim is made that the development of SEM has brought a new level of sophistication to quantitative research over the last three decades. It is also claimed that this is so because the tool has versatility as its explaining power helps in addressing various practical and methodological issues (Hair et al 2011). Referred to in the literature as second generation multivariate technique it is assumed to allow for the simultaneous modelling of associations among the multiple variables (Akter, et al 2017). However, this assumption is premised on the basis that adequate expertise in identifying the variables and a deeper understanding of the contextual issues has been achieved by the researchers (Mendy & Rahman 2019). Proponents also assert that SEM can allow for the measurement of unobservable variables (or latent variables) which can then be applied to observable variables (or manifest variables, items or indicators) as stated by Chin (1998). However, making such a transition requires experience and sometimes training. Similarly, Grewal et al (2004, p. 519) highlighted that “the literature on structural equation models is unclear on whether and when multicollinearity may pose

problems in theory testing”. Such complexity renders the use of the said measurement techniques somehow problematic especially when emotions, biases and personal preferences are involved.

Similarly, these assumptions have been claimed to carry SEM’s stronger reliability inferences in their statistical use. However, such an assumption is made on the basis that there are empirical data available and the model being developed has been premised on relevant and appropriate literature. Such an assumption, it is believed, has the additional capability of affording researchers the possibility to examine data in a nomological net and thereby help them to concentrate on the overall conceptual model rather than a more limited focus on individual coefficients (Akter et al 2017). Given the wonderful promises of the above assumptions and their benefits, it is no wonder that the use of PLS-SEM in Business and Management research in particular and in the social sciences more widely has increased the appetite of its usage. Knowing the laws of theoretical modelling is one thing, applying them is another thing on social phenomena could raise critical insights (Mendy 2019).

However, successive researchers have not fully questioned the suitability of the research tool in the broad spectrum of social sciences. In addition, there is limited contestation in developing and validating research and theoretical models based on the phenomena under investigation and the theoretical debates and discussions in the area. In order to be able to do so, we identified 18 barriers, 8 drivers and 8 impacts of internationalisation on SMEs to see whether the purported claims do hold in developing a model for SMEs in developing countries. These are categorised into different groups to ascertain the extent of the complexity of their relationships. These include political, economic, social and technological barriers with a varying range of factors/aspects/characteristics. The drivers of SMEs’ internationalisation are also divided into firm specific, industry specific and country specific drivers with their attendant characteristics. Finally, the impacts of internationalisation are grouped into financial and non-financial impacts, also with their attendant characteristics. This was done to find out whether PLS-SEM’s claims of versatility/flexibility and its attendant benefits of efficiency and practicality can be analysed by testing their predictors and criterion variables against the empirical data from different SMEs in an emerging economy context.

#### **4. Data collection methods and justification**

To find out the extent to which the PLS-SEM assumptions can be applied within a practical, research context we distributed 250 questionnaires on 4 major divisions (including each village or ward) following an area wise cluster sampling technique given its potential benefits in developing countries (Akter et al 2011). In this research technique, sampling units are selected firstly on the basis of the study’s research question and each of the clusters represents a geographic area/divisions, namely the four major divisions of Bangladesh – Dhaka, Khulna, Chittagong and Rajshahi.

**Table 1:** An overview of the sampling process

<b>Sampling process</b>	<b>Sampling strategy of the study</b>	<b>Comments</b>
Target population	SMEs in Bangladesh that are engaged in international business	The aggregate of all SMEs those are internationalized sharing some common drivers, barriers, impacts of foreign expansion of their business comprising the population of this study.
Sampling frame	4 major divisions of Bangladesh - Dhaka, Chittagong, Khulna and Rajshahi	These 4 major divisions represent sample units of the target population.
Sampling unit	All SMEs that are engaged in international business in these 4 major divisions of Bangladesh	These sample units contain the features of the target population to be sampled.
Sampling elements	Owners or Managers (18+ male/female) of internationalized SMEs in 4 major divisions in Bangladesh	These respondents meet the condition of ethical approval taken during the research award registration and are able to give information to test inferences.
Sampling strategy	Multi stage area sampling is used under the area wise cluster sampling where the units are selected randomly in every stage.	These sampling processes ensure the representation from different socio-economic culture in Bangladesh
Sample size	250 questionnaires were distributed among the owners/managers of internationalised SMEs in each of those 4 divisions	Data were collected from July/2011 till September/2011

Multi-stage area sampling where the units are normally selected in every stage randomly is used (Rahman et al 2017). A systematic random sampling technique was applied to allow for equal representation from different socio economic entities, ensuring an increase in the sampling efficiency by minimizing the costs (Hair et al 2010) and facilitating the tool’s implementation (Malhotra, et al 2006). The survey’s population is defined as SMEs engaged in one form or the other of international business activity. The sample population is divided into

different segments and cross tabulation technique is used to study the relationship amongst the variables within their cross sections. It was thought in line with the research question to adopt the cross sectional data collection method over the longitudinal technique to ensure better representativeness of the samples and minimum response bias in the tradition. This paper examined common method bias (CMB), nonresponse bias and retrospective bias that are very efficient tools particularly for survey based studies following Ahammad et al, (2016). First of all the initial scale was validated through open-ended consultation with academics, policy makers and managers/owners of SMEs. Secondly, this study applied Harman's single factor test following Podsakoff and Organ (1986) and Podsakoff et al. (2003). The un-rotated factor analysis with little over 35% variation in largest factor indicates the absence of common method bias. Similarly, the result from t-tests on the average of very early and very late respondents confirms the absence of retrospective bias by having very insignificant differences.

Usually, for the purpose of carrying out a survey business researchers can use interactive or non-interactive media – i.e. interaction between the researcher(s) and respondent(s) such as through interview or telephone, or the internet or video materials/electronic interactive media based survey approach. Limitations of the interactive interview technique such as greater expense in the form of the interviewer having to physically travel to various locations and respondent anonymity necessitated us to use a questionnaire based survey.

This does not reveal the identity of the respondent and can be circulated to various locations at a low cost, the use of standardised questions and even those that are embarrassing to ask on a face-to-face basis. However, low response rate is a possibility. Among various questionnaire delivery modes considered, a mail delivery was used to distribute the study's questionnaire survey. It is economically viable and a suitable way of carrying out a survey.

## **5. Developing the PLS-SEM Model**

We then looked into the level of abstraction for predictor and criterion variables (Wetzels, et al 2009) as it has been claimed to be one of the most important advantages in model construction (Akter et al 2017; Chin and Gopal 1995) although others differ (Mendy, 2019 Jarvis et al 2003). By investigating the relationship between the environmental factors and internationalisation of Bangladeshi SMEs, we used the factors/characteristics noted earlier to develop three related types of PLS-SEM based models, something that has not been attempted previously. The first related one was based on the environmental barriers, the second one was based on the environmental drivers and the third model was based on the performance of SMEs. All these sectors are related as they highlight the reflective constructs on which the barriers of internationalisation have been developed namely – the Political (and legal), the Economic (and financial), the Technological (and infrastructural) and the Social (and cultural). Similarly, the second related model specified identifies the drivers of internationalisation for Bangladeshi SMEs with three reflective constructs- firm specific drivers, industry specific drivers and country specific drivers. Again, the third related model specified the importance of performance for internationalised SMEs with two additional constructs namely financial and non-financial performance. Based on these constructs, we went on to specify theoretical networks as a methodological way to explain the theoretical meaning of the constructs and their relationships. Although Bagozzi (2011, p. 263) noted the importance of linking theory to methodological usage by asserting "... the theoretical meaning of a construct inheres in what it is and to what it relates conceptually. A construct standing alone is less rich in meaning than one that is explained by something else or one that also explains or predicts something else" but fails to show how its application can be realised. All those constructs are further related to the items or measures. According to Bollen and Lennox (1991), the correlation between two measures is supposed to be highly positive for a reflective construct. This is also supported by Akter et al (2017) and Rahman et al (2017) who have explained internal consistency as one of the most important elements of constructs. However, others have noted personal issues (Mendy 2019; Podsakoff & Organ 1986). Besides, the un-dimensional nature of the measures assists not only in getting rid of the individual measures for the purpose of improving the construct validity but also helps in enhancing content validity. In addition to these, first order hierarchical reflective models, this study also proposed second order hierarchical reflective models. Second order hierarchical reflective model used all the items (manifest variables-MVs) of first order models. Estimation of these models is shown in the following table:

**Table 2:** Estimation of the model

First Order	Second Order
$y_i = \Delta_{\nu} \eta_j + \epsilon_i$ $y_i$ = manifest variables $\Delta_{\nu}$ = loadings of first order latent variables $\eta_j$ = first order latent variables $\epsilon_i$ = measurement error of manifest variables	$\eta_j = \Gamma \cdot \xi_k + \zeta_j$ $\eta_j$ = first order factors $\Gamma$ . = loadings of second order latent variables $\xi_k$ = second order latent variables $\zeta_j$ = measurement error of first order factors

In the above table the equation for estimating the hierarchical reflective models on the barriers, drivers and impacts of internationalisation for SMEs are provided thereby reflecting the full range of manifest variables ( $y_i$ ), latent variables ( $\eta_j$ ), loadings ( $\Delta_{\nu}$ ) and an error term ( $\epsilon_i$ ) as well as the latent variable loadings ( $\Gamma$ ).

**5.1 Findings based on the Model and Analysis**

This paper’s findings are presented on the basis of what has been found when we firstly, analysed the model measurements and secondly by evaluating the model itself and checking the extent to which the various aspects relate with each other within the wider complexity of the model’s frame. The extent to which these are valid and reliable is discussed in relation to the model’s contribution.

**5.2 The PLS-SEM Model and its contribution**

By selecting the appropriate constructs for the model given its importance in SEM so as to avoid problems related to misspecification for the theoretical conclusions (Jarvis et al. 2003) we used PLS-SEM’s assumption of using two measurement models- formative and reflective (Hair et al, 2011) to develop the model. According to Bollen et al (1991), this measurement model is distinguished by the direction of relationship of latent variables (or constructs) with items (measures). This initial step led to the development of a reflective model, which helps to highlight the practical issues faced by SMEs during internationalisation as below:

**5.3 Analysing the model**

We used repeated indicators to estimate the higher order variables. By so doing, we measured all the barriers by using indicators marked (MVs) so as to highlight their factors/characteristics. The results are presented using a set of hypotheses to identify the relative importance of the factors in relation to each other. The selected items highlight the range of differences between the constructs and their convergent validity is duly noted. We note that the empirical results highlight the satisfactory achievement of the model which reflects appropriate reliability, convergent validity.

**5.4 Analysis the model’s results**

By identifying and estimating the relationships between the drivers and barriers to SMEs’ internationalisation and their sub-categories with the attendant objective of checking the extent and nature of the relationships on SMEs’ performance in internationalisation we noted a strong linkage between the latent variables. Therefore, the overall findings have helped in answering the paper’s research question. We can therefore assert that the model is better than what has been attempted previously in highlighting and explaining the nature of the complex relationships between the identified variables and the development of a model based on how people and SMEs deal with barriers and drivers of internationalisation. The usefulness of identifying an appropriate model is shown (see below for two types of models for SMEs’ internationalisation activity).

**Table 3:** Characteristics of the 2 Models

Studies	Hierarchical-Reflective Model	Hierarchical-Formative Model
Chin & Gopal (1995)	Molecular model	Molar model
Akter et al. (2017)	Superordinate construct model	Aggregate construct model
Jarvis et al. (2003)	Principal factor model	Composite latent variable model
Law et al. (1998)	Latent model	Aggregate model
Jarvis et al. (2003)	Common latent construct	Composite latent construct model
Wetzels et al. (2009)	Factor model	The composite model

**Table 4:** Measurements captured by the two models in SEMs

Particular	Formative Measurement	Reflective Measurement
Direction of indicators	From indicators to latent constructs	From latent constructs to indicators
Identical items	Items need not to be identical	Items should be identical
Co-variation among items	Items may not have covariance with each other	Items should have covariance with each other
Nomo-logical net of construct	Nomo-logical net of construct may differ	Nomo-logical net of construct should not differ

Source: Based on Jarvis, Mackenzie and Podsakoff (2003)

All the items used in this study through three PLS-SEM models are highly correlated with each other and also very identical. Considering the above discussions, the reflective model seems most suitable for SMEs.

## 6. Conclusion and new research opportunities

The main research question for this paper was to look into the assumptions of PLS-SEM to see the extent to which they apply in SMEs. To do so, we selected and compared people and non-people drivers and barriers that SMEs face when they seek to internationalise their businesses by penetrating external markets. We adopted an emerging country perspective given the paucity of research in this area. To help achieve and thereby resolve the research question, we developed and went further to validate a related model by using the empirical data from a total of 212 questionnaire surveys. A systematic literature review highlighted the shortcomings/limitations of PLS-SEM's assumptions of versatility, efficiency and practicality when applied onto SMEs in a developing country. The results of the paper will help researchers appreciate the complex nature of relationships that SMEs have to contend with and a deeper appreciation of methodological assumptions (Mendy 2016). Results will also help professional and business individuals ascertain what types of relationships should be given priority as they engage with external world of business. The results also show that additional knowledge in terms of people characteristics need to be factored in PLS-SEM's quantitative/statistical emphasis (Mendy 2019).

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# Teaching Introductory Graduate Research Methods Course: Student-Centered Approach Reflections from Practice

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**Abstract:** Teaching research methodology is one of the core components of various degree programmes. As producing a piece of research is a key characteristic that differentiates academic education from vocational training. More so, research methodology courses are expected to go beyond providing students the foundation to produce research but to also teach students real-life thinking skills and reasoning. This calls for teaching research methodology in manner that students develop deep approaches to learning which will enhance students' engagement with the subject matter resulting in improved analytical and conceptual thinking skills. However research methods is one of the challenging university course to teach. Especially when students hold persistent unfavourable attitudes toward research methods failing to perceive the link between research methods and overall degree program. In the Information Technology and Information Systems domain the subject matter is varied covering areas such as technology, processes and human aspects relating to technology. As such researchers in these two domains have a range of methodologies when planning and conducting research. This paper presents a reflection on adopting a student centred approach towards teaching research methodology course to three different groups of fourth level university students. In this paper the strategies for facilitating deep learning in teaching research methods and research methods in the Information Systems domain will be discussed. In addition reflections on the use of a student centred approach, student experiences and strategies used. The experiences and strategies relate to facilitating deep learning. The experiences are focused on topic identification, conducting and writing up the literature reviews, developing an understanding of the research methodology inclusive of data analysis and presenting the research report. In conclusion lessons learned are presented and recommendation made.

**Keywords:** Research Methods, Teaching, student centred, Information Systems, Deep learning. Active learning

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## 1. Introduction

Universities play an important role in society through the three basic missions of teaching, research, and public service (Pucciarelli and Kaplan, 2016). Thus Barnett and Bengtson (2017), highlight that universities are a space for knowledge creation through research and for understanding of the said knowledge through teaching and learning. Moreover, the production of a piece of research is one of the key differentiators between academic education and vocational education. The research methodology course beyond teaching the students how to conduct research has the potential for teaching students real life thinking and reasoning skills that may be useful in various settings (Vanderstoep and Shaughnessy, 1997). Hence, the university space mandates for teaching research methodology in manner that students develop deep approaches to learning as Hall, Ramsay and Raven (2004) suggest that deep approaches to learning are claimed to enhance students' engagement with their subject material and result in improved analytical and conceptual thinking skills. In addition research methodology course has the potential to assist students to develop 21st century communication skills as students need to present their research effectively in both oral and written forms thus the instructional strategies used should allow for the development of these literacies (DeWitt and Alias, 2017). In addition research methodology plays an important role in finding solutions to real world problems and the discovery of truth with teaching research skills undergraduate students assisting in preparing students for post-graduate studies (Braguglia and Jackson, 2012). The capacity building in social science research methods is positioned by some governments and research councils as crucial to global competitiveness (Lewthwaite and Nind, 2016). However, as Alharbi (2017) indicates research methods is one of the challenging university courses to teach, with lectures often encountering challenges.

A well-known primary challenge in teaching research methodology is how to make the course interesting to students (Braguglia and Jackson, 2012). Another hurdle faced in teaching research methodology is that many students at both undergraduate and graduate levels possess a weak foundation for conducting research making the course challenging both to the instructors and students (Aguado, 2009). Furthermore, students are faced with the problem of having to read a large number of articles to gain an overview of current research in the area of interest and the methods used to determine the contribution of own research findings to the knowledge in the field (DeWitt and Alias, 2017). The reading challenges are exacerbated language and writing style that is used in academic papers that students often find unfamiliar difficult to comprehend and

understand. In addition Students find having to read the large number of articles overwhelming and at times feel it was not meaningful to read the articles.(DeWitt and Alias, 2017). An additional inherent challenge in teaching research relates to the diversity of student academic backgrounds (Alemanne and Mandel, 2018).

Despite research methodology skills being applicable to daily problems to systematically provide thoughtful solutions (Braguglia and Jackson, 2012) students often do not see the practical relevance of the research methods course (Koufogiannakis and Crumley, 2006), nor the link to the degree which they are pursuing. More over similar to other university courses lecturing is the most employed tool for facilitating research methods learning, which according to Thomas and Brown (2011) implicitly assumes that the instructor has valuable, stable knowledge to pass on to students, but in the current and changing environment knowledge is dynamic. Hence Schmidt, Wagner, Smeets, Keemink and van der Molen (2015) add that lectures do not promote critical thinking and cognitive engagement and are based on the information transmission fallacy that students learn by being told.

Despite these challenges, historically the teaching of research methods has received little attention in academic research (Nind and Lewthwaite, 2018). According to Steenkamp and Mccord (2010) in the Information Technology and Information Systems domain the subject matter is varied covering areas such as technology, processes and human aspects relating to technology. Furthermore, Information systems research's main focus is on how information systems as a sociotechnical system may be effectively deployed to improve the human conditions within which the uses of Information technology may be evaluated (Grover and Lyytinen, 2015). The broad nature of research in the area suggests varied approaches to research. Thus, researchers in the information technology and information systems when planning research projects may choose from a range of methodologies most of which are originally derived from research done in other fields such physical, economic, and social sciences (Steenkamp and Mccord, 2010). As such a number of challenges in teaching research methodology in the other fields are of relevance in facilitating research methodology learning in information systems and information technology. As Lewthwaite and Nind (2016) highlight that research methods instructors face additional challenges in teaching research methods as methodological expertise is often fragmented across academic disciplines. Thus in addressing these and the inherent challenges in teaching research methodology and its importance there is need to shift from a teacher centric to student centric approach so as to enhance student engagement and active learning. As a student centred approach moves away from an instructor transferring information about research methodology to rather a creation of an interactive environment where students master technical information through experience, reflection, and critical analysis (Braguglia and Jackson, 2012).

Student centred Learning

### **1.1 Defining student centred learning**

Defining student-centred learning may pose a challenge as O'Neill & McMahon (2005) highlight that the term 'student-centred learning' is overused and could mean different things to different people. Moreover according to Guzman (2016) the challenge in defining student centred learning is compounded by the fact that scholars use up to 11 different names to refer to student centred learning such as active learning, collaborative learning, inquiry based learning problem based learning, peer led team learning, peer instruction, inquiry guided learning and project based learning. These different names besides active learning seems to refer to the different strategies that one may use to facilitating student centred learning. Thus student centred learning may also be called active learning. The table below represents a sample definitions of student centred learning.

<b>Author(s) and year</b>	<b>Student centered learning definitions</b>
De Guzman, M. (2016)	An instructional approach in which students influence, content, activities, materials and pace of learning (40)
Senanayake, S, H., D. Hettiarachchi, E and Hewagamage, K, P.(2015)	An educational approach that replaces traditional lectures with active learning, self-learning, group learning and ultimately empowers students to take responsibility for own education becoming life long learners rather than learning by in the spoon feeding education (183)



Ranjani, R.P.C. Weligamage, S. Karunathne, W.V.A.D Fernando, P. N. D. (2014)	Approach to education focusing on the interests of students rather than those involved in the educational process such as teachers and administrators (182 Referencing HETC project report)
Mitchell, A. , Petter, S. & Harris, A. L.(2017)	One time or ongoing student exercise that is introduced in classrooms to encourage student thinking and participation in an effort to engage students in the learning process
Bonwell and Eison (1991)	Instructional activities involving students in doing things and thinking about what they are doing
Lea,s.J. Stephenso, D and JTroy, J (2003)	The reliance on active rather than passive learning, emphasising on deep learning and understanding, with increased responsibility and accountability on the part of the student, increased sense of autonomy in the learner, interdependence between teacher and learner, mutual respect within the learner teacher relationship and reflexive approach to the teaching and learning process on the part of both teacher and learner.

These various definitions were compared and synthesised and in these paper student centred learning is used to refer to;

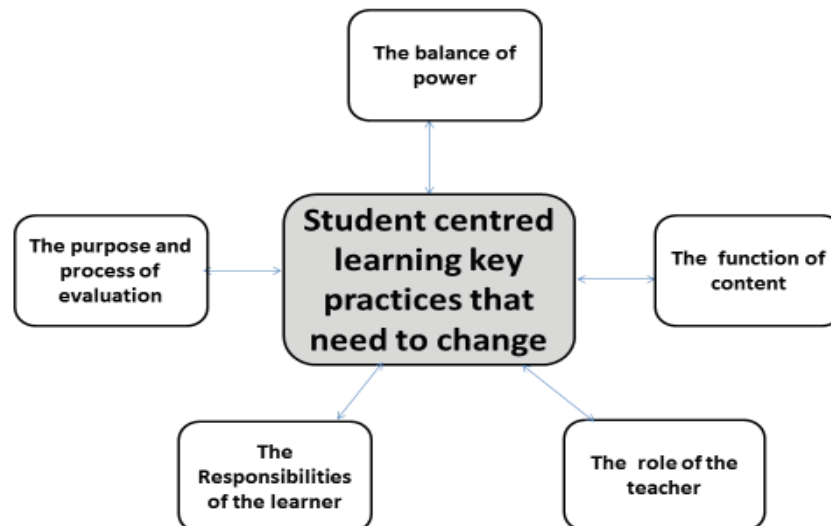
*“ A teaching approach that seeks to develop life-long learning and critical thinking by moving from traditional lecture approach of spoon feeding to an active learning through doing and thinking emphasising deep learning increased student responsibility, autonomy and accountability for learning and ongoing reflection from both the teacher and the student.”*

## **1.2 Student centred learning benefits and the required key changes to teaching practice**

Student centred learning is appealing to universities and according to Liard, Shoup, Kuh and Schawrtz (2008) a growing body of research suggests that educationally effective learning environments are characterized by the promotion of deep approaches to learning. Thus, Guzman (2016) suggests that using student centred learning facilitates self-directed learning with educators ensuring learning is experienced and competency based learning excels. Hence colleges and universities are paying increased attention to the benefits of student centred approaches to teaching and learning (Laird et al., 2008). Moreover, when instructors uses student centred approaches students engage thoughtfully with course material both inside and outside the classrooms(Mitchell et al., 2017). In addition student centred learning promotes different types of thinking such as analytical, critical, reflective and creative as well as supporting conceptual understanding and retention of knowledge and self-directing and regulating learners (Guzman, 2016) which are key skills and competencies required for the 21st century students. According to Mandel (2017) a major factor in the success of a student centred research methodology course is the availability of the instructor to the students throughout the semester and the instructor responsiveness to students needs in a new approach to a difficult course.

Student centred learning requires key changes to the practice of teaching and learning, according to Weimer (2002) these five key changes entail the balance of power, the function of content, the role of teacher the responsibilities of the student and the purpose and process of evaluation. The balance of power relates to the sharing of power between students and teachers with the power distributed in amounts and proportion to the student’s ability to handle the power as opposed to a wholesale transference of power that might lead to teacher’s violation of the given legitimate power (Weimer, 2002). In student centred learning the content is not an end but a means to an end that is used to facilitate learning the specific body of knowledge, as a vehicle to develop learning skills to promote student self-awareness and confidence on a continuous basis. (Weimer, 2002). Furthermore the Weimer (2002) highlights that the role of the teacher is to redistribute power and to facilitate learning in individual and collective contexts by connecting students and resources, whilst designing activities and assignments that engage students. As well as modelling for the novice students how difficult material may be accessed, explored and understood. The other requisite change is in the responsibility of the student, responsibility for learning shifts to the student hence the methods of content delivery need to provide students with the opportunity to take control of learning and to be actively involved in the learning process (Weimer, 2002). In student centred learning the process and purpose of assessment has to change hence

Weimer (2002) suggest that assessment should not be used only to generate grades but more focused on promoting learning with educators still evaluating and grading student work but evaluation activities that involve students are included in the process both in assessing own work and participating on evaluation of work done by peers (Weimer, 2002). Thus a variety of tools are used to evaluate and assess different aspects of learning(Wright, 2011) hence addressing challenges on the assumption that grades measure learning and the subjective nature of grades (Weimer, 2002). These five key areas of change to teaching practices as drawn from Weiner (2002)are balance of power, function of content, role of the teacher, responsibilities of the student and the purpose and process of evaluation are illustrated in figure 1. These five key areas of change serve as a comprehensive guideline for assessing the extent to which facilitation in research methodology courses has shifted from teacher centred approach to a student centred approach.



**Figure 1:** Student centred learning key practices that need to change

### 1.3 Teaching research methodology student centred approaches

In teaching research methodology course there are emerging examples of using student centred approach.

However, according to Aguado (2009) there are different goals for research methods training amongst institutions, departments, and at instructor level with these goals leading to variety emphasised on various aspects of research methodology. For example some may emphasize the diversity of social sciences, and the types of questions asked in various sub-disciplines whilst others might advocate epistemology and the need to understand the role of scientific knowledge. Examples goals that were pursued in teaching research methodology across the displaces include Aguado (2009) that draws from Confucius “I hear and I forget. I see and I remember. I do and understand to adopt hands on approach that facilitates for students to gain practical knowledge of how research is done. Another example is that of Mandel (2017) whose Masters research methodology course was aimed at demonstrating relevance of research methodology course to the core curriculum. This was facilitated by students completing a research project for a client over one semester.

According to Mandel (2017) the approach that was used beyond addressing the students concerns regarding the relevance of the research methodology course and learning more skill as one student said "the real application of the concept increased my understanding, making me a better researcher and interpreter of other's research.

In generalising on student centred approaches, according to Schmidt et al (2015) all approaches to active learning during lectures assume that students first acquire knowledge individually, either through pre-reading or through short presentations by lectures-in class. Often project-based learning is a model is used to organizes learning around projects with projects referring to complex tasks, based on challenging questions or problems, that involve students in design, problem-solving, decision making, or investigative activities, provide students the opportunity to work relatively autonomously over extended periods of time; and culminate in realistic products or presentations (Braguglia and Jackson, 2012). Strategies that instructors could use include

incorporating active learning assignment, cross methods and cross-discipline guest discussion facilitators, focus on research in the “real World and fostering faculty teaching and collaboration (Pfeffer and Rogalin, 2012).

The use of tools such as referencing software like Endnote and Mendeley are valuable in supporting student centred approaches and not only giving students practical but with some students finding the use of tools as contributing to making the course interesting. Another tool that has potential for systematic identification of research problems and supporting effective literature reviews is proposed by Sturn, Schneider and Sunyaev (2015) a LitSonar tool to enhance the efficiency of the process whilst maintaining and improving validity and reliability meta search engine for academic literature review that unifies access to high quality content from numerous literature databases . LitSonar.com an online tool that generate appropriate search queries for a variety of literature databases with the ability to selected specific database s or specific high quality journal. In using the Litsonar Herwix and Rosenkranz (2017) to review the literature in design science research that is conducted using the LitSonar to generate search queries and identified 196 articles from senior scholars basket of 8 from 1977-2016. Thus having identified the articles subsequently and subsequently conduct co-citation analysis to objectively look at the current theory in use in design science research and systematically identify research opportunities

## **2. Using student centred approach strategies and student experiences**

The paper is based on teaching research-methodology undergraduate students in Information Communication Technology. The instructor’s main goal is to use a student centred approach to demonstrate the relevance for research to the overall degree programme whilst ensuring that students to develop critical thinking and acquire skills to become life- long learners and whilst preparing students to be able to conduct work related research and building a foundation for further studies. A student centred approach that is used includes a mix of face to face lectures that include instructor’s presentations of research methodology concepts, assignment and students’ presentations. As well as group supervision of ten students per group where the students get a chance for the instructor to look at each students current status of work towards the final product and clarify issues for students.

### **2.1 Topic discovery and research problem formulation.**

As a first assignment students choose a topic within the Information technology area as a focus point for the eventual empirical research. The emphasis is on selecting a topic that is related to each individuals growth aspirations in the Information Technology industry such that the student can use the research to know more about the area of interest and identify challenges in the area. This first assignment entails using google scholar to search five most cited articles and five most recent. These articles are read and captured using benefits table and literature review tables. The tables are submitted in groups of ten students per group to the instructor every Wednesday by 11:59 PM allowing the instructor to review the work of each student and choose two students from each group to present in the Saturday weekly sessions. These tables are updated on weekly basis and support students identification of research problem and writing the introduction to the study.

### **2.2 Conducting and writing literature review**

Once the students have identified the research problem and questions the weekly tables are used for the continuous updates of the literature review tables. Therefore, students are still covering substantial amount of academic material but get the opportunity to write the final product on an ongoing basis. As a way for the instructor to exercise control and ensure the module objectives are met the students have to choose a recent article that has a conceptual framework or theoretical for testing in in the student’s environmental context.

Thus the literature review table focus is on reading and writing on the components of the conceptual frame work enabling sufficient material to be covered so as to be in the position to generate research questionnaire in the second part of the module.

### **2.3 Developing an understanding of the research method inclusive of data analysis**

The main tool that is used to support the students understanding of the layers of research methodology is the Saunders, Lewis and Thornhill ( 2009 )research onion that was adapted to cover only the positivist and interpretivist paradigms. The students were exposed to conducting research using both paradigms but for the individual research projects students conduct positivist research due to the time constrains that they have to

cope with in terms of data collection. Peeling the onion is one area which the students found challenging in the beginning but as the students continually peeled the onion they could gradually comprehend the nuances around philosophy epistemology and ontology and how these influence the research methods, strategies, sampling data and design as well as research ethics. This section of the course benefited immensely through student own reading of research text books resulting in some students going beyond developing an understanding of positivist and interpretivist paradigms but extending knowledge to other paradigms such as pragmatism and design science.

#### **2.4 Writing the research report**

Writing the proposal and the research report are treated as continuous process throughout both semester as using weekly assignments and the mark submission assignment as input and final presentation where's students share research findings. Academic writing was found to be one of the areas that students find quite challenging and especially moving away from author centric to a concept centric approach and the use both In-text citations and references. The use of Endnote for which students received training and support from the library as well as from the instructor appears to be one of the key factors contributing to success. The collaboration between the library and the instructor proves to be valuable in terms of assisting students in learning how to access online databases off campus as these are part-time students.

#### **2.5 Student experiences and reflections**

Whilst the approach seeks to adopting a student centred approach to teaching research methodology similar to other approaches presented in the literature on using student centred approaches to teaching research methods the approach adopted falls short in terms of fully embedding five key changes to practices. The approach attempts to address the balance of power with the students having the choice of topic to conduct the research with the instructor's guidance. Despite the limitation the approach was able to achieve the objective of illustrating relevance of research to a real work situation thus being able generate motivation and interest for the students and prepare them for further studies with a majority of students expressing desire to undertake further research studies in the future. The adopted approach made efforts to use content to facilitate learning in research methods and as a vehicle to promote student self-awareness and confidence. As one student had found the writing skills attained as part of the course valuable when writing work related reports and being asked to teach her colleagues how to write reports. An example of the confidence that one student shared was that in the working environment some of the colleagues are pursuing research related studies and is a sort of 'reference' in research related aspects to the colleagues.

The role of the teacher and the library services served as valuable tools in terms of connecting students to resources mainly online academic databases. However, more needs to be done in shifting more responsibilities to the students such as the use of blended learning in future offerings of the module where lesson are made available online with students required to review such lesson and complete exercise that will be captured on the learning management system linked to individual students thus enabling the instructor to monitor and support students' progress before face-to-face sessions as that will allow for more time for exercises and group supervision which is one of the tools that the students seem to prefer but is limited mainly due to the students teacher ratio as well as the use of face to face session to cover the technical components of the course. The use of the literature review tables whilst supported the active learning and supporting students with making progress on their work have the potential to be enhanced with the use of tools such Litsonar as basis of conducting effectiveness literature review creative identification of the research problems. The purpose and process of assessment tried to align with student centric approach promoting ongoing learning and often students being given the opportunity to redo and resubmit the work. However there was limited opportunity involve students in the process both in assessing own work and participating on evaluation of work done by peers. As such this limitation would need to be addressed in future offerings of the course.

### **3. Conclusions and recommendations**

In this paper a student centred approach to teaching research methods to fourth level students is presented.

The paper also presented what is student centred learning and examples of previous approaches to teaching research methodology using student centred approaches. The paper also shared the strategies used to facilitate deep learning and life-lifelong learning in teaching research methodology and a reflection of student experiences and lessons learned and potential areas of future improvement in adopting the student centred approaches. In particular an evaluation of the five key changes to facilitate student centred learning has been

outline. Further study would focus on examining detailed examination of student's experiences using student feedback from the modules as well as ways to ensure a comprehensive approach to embedding the five requisite key changes to teaching practice teaching research methodology for fourth level students in Information Communication Technology.

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# Metaphors Entrepreneurs use: Methodological Reflections

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**Abstract:** This paper presents a process for analysing the metaphors entrepreneurs use when they describe their lived experiences of their business' development. We argue that the researcher seeking to explore new venture creation from the entrepreneur's point of view must explicitly undertake analysis of the metaphors used in the course of such a description, or risk being misled by interpretations of formulaic responses. A process for analysing entrepreneurial metaphors, based on the literature, is applied in a qualitative case study design of 8 entrepreneurs in different stages of the new venture creation process. The analysis process includes identifying the metaphor target, source, salient features, similarities and differences. By analysing metaphor in this way, the researcher questions the meaning intended by the entrepreneur, both by expression and by omission, as well as considering how the audience might interpret the metaphor in order to arrive at emergent meaning. This analysis reveals that, a deep, context relevant understanding is achievable through examination of metaphors that entrepreneurs use to describe their new venture experience.

**Keywords:** Qualitative, metaphors, analysis, entrepreneurs

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## 1. Rationale for the Study

Entrepreneurial research is subject to a host of conceptual and methodological problems (McDonald, Gan, Fraser, Oke and Anderson, 2015). Prior research is said to have emphasised deductive theory building, rather than inductive theory development and incremental rather than generative in nature (Shepherd, 2015). The dominant approach in entrepreneurial research is quantitative (Baker, Powell and Andrew, 2017) and outcome-driven, based on cross-sectional variance methods, rather than event-driven process methods (McDonald et al., 2015; Van de Ven and Engelman, 2004).

Existing methods are thought to be inadequate for exploring and understanding the entrepreneurial phenomenon because it is idiosyncratic, characterised by reciprocal causality, complex sequences and non-linear relationships (Howorth, Tempest and Copeland, 2005). The literature has suffered from a lack of methodological variety (McDonald et al., 2015), specifically with regard to the lack of qualitative studies (Rauch, van Doorn and Hulsink, 2014), which has the effect of constraining the development of the field (Suddaby, Bruton and Si, 2015). This highlights the need for theorising about the subjective experience of the entrepreneur (Walter and Heinrichs, 2015; Hoang and Gimeno, 2005) and the way that they interact with the contexts in which they find themselves (Shepherd, 2015). However, there are three key difficulties inherent in conducting research of this nature.

Firstly, entrepreneurs are often deeply emotionally involved with their businesses (Cardon, Glauser and Murnieks, 2017; Branzei and Zietsma, 2004), their identity may be so wrapped up with that of their organisation that they cannot readily distinguish between the two (Shepherd and Haynie 2009; Howorth et al., 2005). The individual receives important psychological benefits from defining his or her identity as an entrepreneur: there are feelings of satisfaction derived from being part of the entrepreneurial group; from receiving positive feedback from others (Shepherd, 2015; Hoang and Gimeno, 2005); and from knowing that she or he is in some way unique and different from others (Shepherd and Haynie, 2009; Howorth et al, 2005).

Secondly, entrepreneurs often describe their experience in highly formulaic terms (Nicholson and Anderson, 2005). When individuals are required to make judgements about an uncertain reality, they have a tendency to reach for the most easily recalled data to support their argument. Entrepreneurs will frequently use highly available targets such as 'Bill Gates' or 'Richard Branson' as the basis of comparison with their own vision and efforts (Shaver, 2003).

Thirdly, entrepreneurs are said to 'operate at the edge of what they do not know', (Nicholson and Anderson, 2005). The uncertain and ambiguous environments they occupy are often difficult for the entrepreneur to understand and even more difficult to explain to others (Clarke and Holt, 2017; Hill, 1995). As a result, entrepreneurs use colourful, exciting language (Branzei and Zietsma, 2004) and often make extensive use of

metaphor when they describe their experience. The use of metaphor helps entrepreneurs to interpret large amounts of data, articulate evocatively, communicate experiences with high emotional content and to distinguish between what is important and what is unimportant (Hill, 1995).

We therefore argue that the researcher seeking to explore new venture creation from the entrepreneur's point of view must explicitly undertake analysis of the metaphors used in the course of such a description. Researchers who ignore this metaphorical language risk being misled by interpreting the formulaic responses of entrepreneurs, rather than achieving the real insight that is the hallmark of good qualitative analysis.

## **2. Literature review**

Metaphors are usually understood to be the mechanism by which one construct is understood in terms of another. However, the use of a metaphor is not simply a labelling exercise, as the metaphor maker conveys a cluster of explicit and implicit meaning that extends well beyond the obvious. In many ways, metaphors construct realities and guide future action because they define and reinforce experiential coherence (Clarke and Holt, 2017; Nicholson and Anderson, 2005), and effectively make meaning. This is particularly true for entrepreneurs, who do not merely tell stories about the entrepreneurial experience, they enact them in a way that provides legitimacy and accountability for their actions (Anderson and Warren, 2011; Pentland, 1999).

Several metaphorically based studies have focussed on the macro-level of analysis, in that they consider the views of broader social actors as they relate to the entrepreneurial phenomenon (Clarke and Holt, 2017; Walsh and Passerini, 2011). In this way, analysis of metaphor use also provides insight into the dominant ideology of a particular culture. For example, the metaphors used by entrepreneurs in the USA emphasise verbs and are often highly emotionally charged (Dodd, 2002), while European metaphors are much more emotionally neutral (Koiranen, 1995). Therefore, metaphor analysis can provide useful insight into the way in which entrepreneurs interact with their context, thereby meeting the need for entrepreneurship research that is more interactive (Shepherd, 2015)

Two seminal studies of the metaphors entrepreneurs use illustrate how they view themselves (Dodd, 2002). In her study of secondary data comprising 24 high achieving entrepreneurs' descriptions of their experiences, Dodd (2002) found that the metaphors entrepreneurs used included: journey, race, parenting, building, war, lunacy and passion. In his survey of entrepreneurs, managers and others, Koiranen (1995) uncovered six key metaphors to describe the entrepreneur: as creative or industrious actor, as a special character or feature; as machine or other physical object; as natural phenomenon; as sportsman or gameplayer; and as adventurer or warrior. In a more recent study, Clarke and Holt (2017) use a drawing methodology to demonstrate the richness and complexity of entrepreneurial identity as expressed through visual metaphor.

By examining the metaphors that entrepreneurs themselves use to describe the new venture experience, a deep understanding is achievable, because metaphor is a way of seeing and organising reality (Cornelissen, 2005) and making meaning of the experience of entrepreneurship (Clarke and Holt, 2017).

## **3. Research design and methodology**

A multiple case-study design was conducted, as part of a larger study of the dynamics of new venture creation from the perspective of the entrepreneurs themselves (Eisenhardt, 1989) Cases were selected purposively, on the grounds that a particular case illustrated some feature considered to be of interest (Silverman, 2005). For each case, two interviews were conducted with the core respondent and one each with a work colleague and family member in order to triangulate the data and ensure that a rich description of the experience was achievable, from both a personal and business perspective. Questions were open-ended and relatively unstructured, such as "tell me how you started your business..". Prompts were limited to asking for more details about the thoughts and feelings the entrepreneur had during the experience. This allowed respondents considerable latitude and encouraged authentic reflection about the entrepreneurial experience. The interviewer concentrated on documenting the entrepreneur's story rather than capturing answers to specific questions. A brief description of each of the entrepreneurs in the study appears in Table 1.



**Table 1:** Case Vignettes

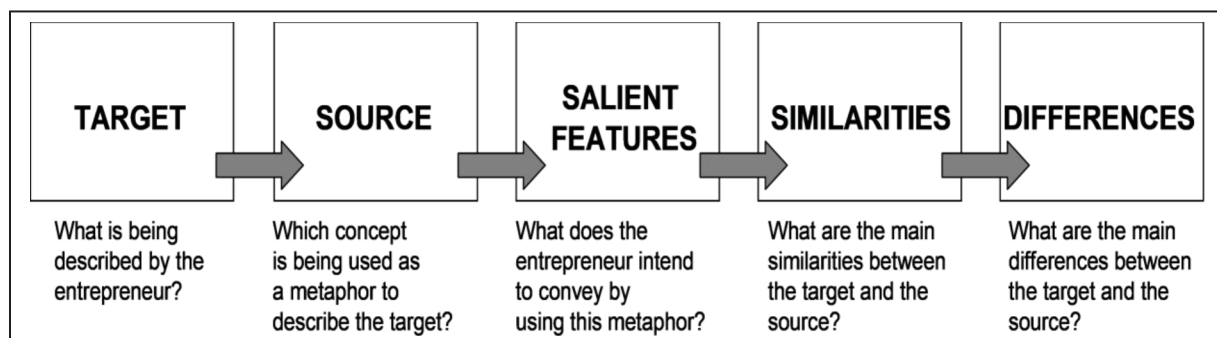
<b>Ahmed</b> is a 36 year old male, who has worked his way through the ranks of the IT (information and technology) consulting and software development industry. Ahmed operates a successful IT services and software business employing over 100 people.
<b>Andile</b> is a 24 year old male with a commerce degree, who works as a marketing professional in a high-profile fast-food franchise. Together with a partner, Andile is about to launch a denim jeans brand specifically designed for curvaceous women.
<b>Byron</b> is a 37 year old male with both an engineering degree and a master’s degree in project management. In partnership with his wife, Byron runs a service quality enhancement and measurement business for applications in the retail and financial services industries.
<b>Hans</b> is a 37 year old male and self-taught agricultural consultant and has started three entrepreneurial businesses since leaving school. His current business focuses on the production of essential oils for global food and flavouring markets.
<b>Margaret</b> is a 38 year old female with a degree in mathematics and an MBA. Margaret has recently resigned from a high level corporate position to start her own consultancy in the are of IT strategy and implementation
<b>Johan</b> is a 44 year old male with an engineering degree and an MBA. In partnership with three others, Johan has developed a flexible consumer database which can be used in credit rating and security applications.
<b>Andre</b> is a 44 year old male who left high school at 16 and obtained a diploma in graphic art. Andre is a serial entrepreneur, whose latest venture is the development and commercialisation of an automated freight management system for the transport industry.
<b>Kenneth</b> is a 27 year old male with matric and a diploma in information technology. Although he is a self-taught photographer, Kenneth runs a successful corporate events photography business which employs 2 people.

For this study, thirty-two interviews were conducted, each producing a 20-page transcript, making a total of 640 typed pages of raw data. The data was analysed inductively, following Saldhana’s (2015) iterative process of coding, categorising and theme-building. From the data, 452 codes were generated, based on 1 634 quotations, and categorised into 30 categories and 16 themes. The resulting analysis was repeatedly reviewed for coherence and internal consistency and linkages between codes and code families were devised. At this point the metaphor analysis was conducted.

#### 4. Metaphor analysis framework

Metaphor analysis requires looking beyond the surface label of the metaphor – it is not enough to observe, ‘entrepreneurship is like parenthood’ the researcher must analyse the metaphor to identify the different dimensions of meaning, and to enable systematic comparison across a range of sources. This framework encourages the researcher to look beyond the surface expression of a metaphor used in the entrepreneurial discourse, to describe the extended meaning behind the metaphor and to define the shared meaning between metaphors used by different entrepreneurs in the study.

In the literature, analysing metaphors requires distinguishing between the target, the phenomenon the metaphor seeks to describe – in this case, entrepreneurship – and the source, the construct in terms of which the target is described (Cornelissen, 2005). The use of the metaphor is intended to highlight salient features (Reimer and Camp, 2006) of the source and ascribe them to the target. Since metaphor always creates a tension between the literal meaning and the figurative meaning (Reimer and Camp, 2005), analysis also examines the implied differences and similarities between the source and the target. A metaphor analysis framework based on the literature is illustrated in Figure 1:



**Figure 1:** Metaphor analysis framework

Having analysed the metaphor in this way, the researcher questions the meaning intended by the entrepreneur, both by expression and by omission, as well as considering how the audience might interpret the metaphor in order to arrive at some notion of emergent meaning. Finally, the researcher considers what insights the metaphor might offer in the light of the existing body of knowledge.

## 5. Findings from the study: metaphors used

In this study, each entrepreneur was characterised by their use of a particular metaphor to make meaning from their entrepreneurial experience, as summarised in Table 2.

**Table 2:** Metaphors of the entrepreneurial experience

Cases	Source	Features	Differences	Similarities	Illustrative quotation from transcript
Ahmed	Journey	Starting point Movement Goal Progress	Stability Aimlessness	Unexpected Overcoming difficulties Exploration	<i>Yes, well I can tell you it has been a journey of unknowns. It's been, for me, it's been very different, because coming out growing up, not being exposed to the corporate world.</i>
Andile	Challenge	Difficulty Engagement Manageable	Simplicity Routine Tedium	Demanding Exciting Satisfying	<i>There have been a lot of challenges along the way that have kept it interesting. There has always been something to figure out, a problem to solve, there has always been an issue.</i>
Byron	Change	Transformation Development Learning	Enduring Permanent Stable	Present difficulty Future hope Innovation	<i>But then after a while you see that your financing is running out and maybe it's too posh where I am staying, I need to move to this place and what I am doing is not right. And then you adjust.</i>
Hans	Play	Enjoyment Excitement Creativity	Seriousness Difficulty Tedium	Challenge Experimentation Fun	<i>Well it's the thrill of doing business. It's like I can sell this to you for that much but let's see if I can push it to that amount (chuckling). Let's see if you'll actually take it for that. Isn't that what business is about? It's fun.</i>
Cases	Source	Features	Differences	Similarities	Illustrative quotation from transcript
Margaret	Turbulence	Ambiguous Irregular Disorder	Progress Development	Uncertainty Lack of control Discomfort	<i>Like I'm saying nothing is smooth, and if you ever thought that it would be plain sailing then you find yourself being very wrong.</i>
Johan	War	Conflict Ruthlessness Danger	Cooperation Productivity Progress	Competitive Opposition Complexity	<i>I would say there were no morals in business for that matter. It's war. That's what it boils down to.</i>
Andre	Growth	Develop Increase Productive	Stasis Entropy Tedium	Progress	<i>I think it's good to be, to go through this process because as you are answering questions you learn more about yourself and you, you can see how you have progressed.</i>
Kenneth	Vision	Focus Future Understanding	Uncertainty Ignorance	Learning Mastery	<i>I think I had my head screwed the right way on and my heart was in the right place, and just focusing on what I was busy with at that time. Just keep persisting in whatever I was doing ... and focusing and keeping the main thing ... the main thing.</i>

By using the journey metaphor, Ahmed is reflecting on his own development, and communicating his ability to learn and progress, even in the face of obstacles. Ahmed simultaneously admits to the difficulties he has faced during the entrepreneurial experience and celebrates his ability to successfully overcome them. He even implies that without risks and obstacles, the entrepreneurial experience would not be as enjoyable or rewarding.

Andile makes sense of his entrepreneurial experience primarily by referring to the challenge it represents. Andile's description of the challenge is reminiscent of one of Garneau's (2001) 14 forms of fun. This is termed 'intellectual problem-solving', whereby the individual gains pleasure and personal satisfaction from finding solutions to problematic situations. The challenge is a game, a metaphor Andile often uses to describe the experience of new venture creation.

Byron frequently refers to the entrepreneurial experience as an instrument of personal change. This change metaphor compares and contrasts the pre-entrepreneurial and post-entrepreneurial experience, highlighting the learning and development that takes place throughout new venture creation (Cope, 2005). The metaphor describes a transition process that is neither easy nor comfortable, but the end state is nevertheless desirable.

Hans understands his entrepreneurial experience primarily through the medium of a 'play' metaphor (Hill, 1995). He frequently describes new venture creation as 'fun' and refers to his own enjoyment and pleasure in the process. One dimension of this metaphor refers to the sensation of excitement Hans feels when faced with

the uncertainty of a particular outcome. Experimentation is also strongly associated with 'play' and 'fun', as is a denial of the possibility of failure or any negative consequences to less-than-successful endeavour.

Most notable in Margaret's descriptions of new venture creation is the notion of 'turbulence', the unexpected, irregular and uncertain nature of the process. The idea of turbulence is applied to the market's reaction to Margaret's offerings, which did not immediately live up to her expectations, something she was surprised by at the time and still finds difficult to understand.

Johan's way of making meaning is by reference to a hostile external environment. When his assumptions about the competitive environment proved incorrect, his idealism was undermined and he responded by developing a vivid set of war-like metaphors to explain his experiences. Johan seeks to evoke sympathy and support for his own actions through the use of this metaphor, because the intensity of his rivalry can be justified if it is seen in relation to the immoral actions of others.

Andre makes meaning from his entrepreneurial experience primarily through referring to it as a mechanism for personal growth. The growth that takes place is not seen merely as a by-product of new venture creation, but is to be valued for its own sake, whatever the success or failure outcomes of the business itself. The implication is that this growth is uniquely associated with the entrepreneurship and is not achievable through other educational or occupational experiences. Without the kind of growth experienced during entrepreneurship, the subject believes that individuals are in entropy, and will eventually 'die'.

Kenneth constructs meaning from his entrepreneurial experience by using 'visual' metaphors. The visual metaphors are used to describe his awareness of and ability to identify opportunities, as well as to describe his intentions and the future direction of the business. Visual metaphors also describe his decision-making process and the need to be disciplined about what activities are undertaken by the entrepreneur. Indeed, Kenneth ascribes his business success to his ability to concentrate on his business to the exclusion of all else, and uses a visual metaphor to do so.

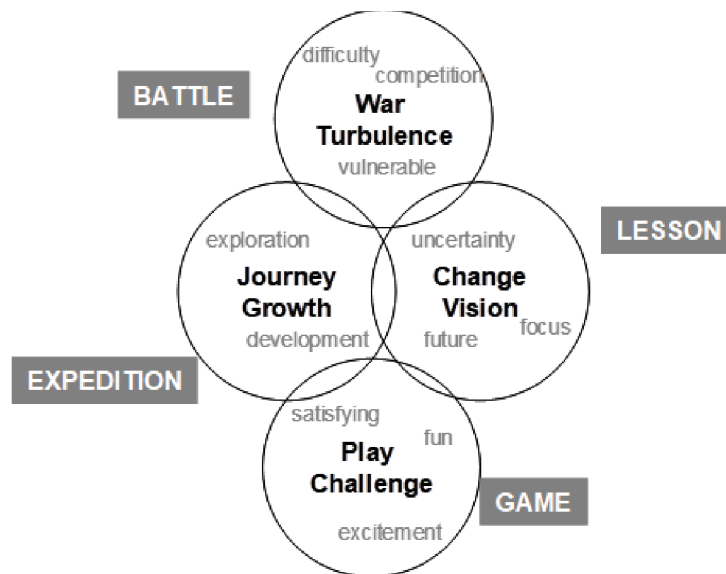
## **6. Discussion and implications**

This analysis has six key methodological implications. First, as noted in the literature, the study confirms that metaphors are not simply ornamental parts of speech; they are tools for understanding and communication, allowing entrepreneurs to express difficult concepts in a vivid and compact way (Clarke and Holt, 2017; Schmitt, 2005). Secondly, although entrepreneurs may favour a single metaphor, used in several different ways to describe their businesses and their experience of new venture creation, they will often use several different metaphors to communicate different dimensions of their world view. Thirdly, the study confirms that metaphor is typically used by entrepreneurs to describe situations that are highly emotive, rather than merely describing actions (Shepherd, 2015; Ortony and Fainsilber, 1987). Fourthly, as noted in the literature, the use of metaphor may be unconscious, reflecting what users see as truth, but a truth that is not easy to articulate (Schmitt, 2005).

Finally, in using a particular set of metaphors, entrepreneurs give insight into the common mythology and meaning they share with other entrepreneurs, as well as revealing something about their conception of the entrepreneurial role and their own identity. Although the metaphors used by the entrepreneurs in this study seem on the surface to be quite different from each other, further analysis revealed that four clusters of common meaning are discernible, as illustrated in Figure 2.

The 'expedition' cluster contains elements of personal growth and development while simultaneously making reference to the risk inherent in an uncertain outcome, and the need to be adequately prepared prior to commencement. Of particular interest is that the use of these metaphors implies that the risk and uncertainty is enjoyable and fun (Garneau, 2001) for the entrepreneur, rather than something to be avoided or minimised.

The 'lesson' cluster compares and contrasts the pre-entrepreneurial and post-entrepreneurial, highlighting the learning that takes place throughout new venture creation (Rae and Wang, 2015; Cope, 2005). The metaphor describes entrepreneurship as a personal transition process that is neither easy nor comfortable, but the end state is nevertheless desirable. Moreover, by conceptualising venture creation as personal transformation, the entrepreneur again rationalises that the experience is significant, whether or not the business is successful.



**Figure 2:** Metaphor clusters

The ‘battle’ cluster highlights the complex and difficult nature of business generally, especially for the new entrant in the developing country context, who must prepare for but may not be adequately resourced to compete with more established rivals. The battle cluster suggests an extreme form of competition in which the competitor becomes a villain that must be beaten by the heroic entrepreneur (Anderson and Warren, 2011; Lakoff, 1991). The metaphor also makes reference to the danger or risk involved and suggests that as a consequence ordinary rules of social engagement do not apply to entrepreneurship (Lakoff, 1991).

As Vervoorn (2006) demonstrates, ‘vision’ universally serves as a metaphor of knowledge acquisition, an aspect of new venture creation that offers the entrepreneur inherent satisfaction. The implication is that this growth is uniquely associated with the entrepreneurship and is not achievable through other educational or occupational experiences. Interestingly, the uncertainty implied by the learning process implies ignorance, which in turn may offer a feasible explanation for what is more commonly thought of as entrepreneurial boldness. Perhaps entrepreneurs do not take risks because they are braver or more optimistic (James and Gudmundsson, 2011; Palich and Bagby, 1995), but simply because they do not know what lies before them.

The ‘game’ cluster highlights entrepreneurs’ engagement in new venture creation and makes specific reference to the pleasure they derive from the entrepreneurial experience. The game metaphor highlights the competitive dimension of entrepreneurship, especially in the context of the entrepreneur’s own need to achieve (Kerr, Kerr & Xu, 2018; Johnson, 1990). The use of this game metaphor implies that entrepreneurship could be considered an activity that requires both skill and luck, but occurs within a well-defined structure that can be learned (Rae and Wang, 2015; Cope, 2005).

## 7. Conclusion

In summary, this analysis reveals that the entrepreneurs in this study recognise the need to prepare for new venture creation, they acknowledge that they are vulnerable to a hostile environment, and are engaged in a difficult and challenging process. Nevertheless, they look forward to a better future and to achieving their goals, while finding opportunities for learning and development as well as pleasure in the process of new venture creation. The main implication of this analysis is that the metaphors used in the study point to a shared understanding of the benefits and challenges of entrepreneurship, which has the potential to make communication with and between entrepreneurs more effective.

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# Guidelines for Designing an Interpretive Case Study for Business and Management Doctoral Students

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**Abstract:** Doctoral students adopting an interpretive case study approach often struggle to develop their skills adequately enough to design and execute their study. The purpose of this paper is to offer doctoral students practical guidelines on how to design a single in-depth interpretive case study for research in Business and Management doctoral studies. These best practice guidelines emerged from a synthesis of leading research work on case studies and, in particular, interpretive case studies. The guidelines are organised into a comprehensive framework that considers key design aspects, such as the research problem, philosophical perspectives, qualitative approaches, case study strategy, theoretical framework(s), the case study site, unit of analysis, data sources, data collection, data analysis and ethics. The guidelines will help students to cope with these key design aspects and improve their overall ability to conduct competent interpretive case study research. While these design guidelines are not exhaustive, it is hoped that it will encourage business and management doctoral students interested in employing interpretive case study research to approach this intellectually challenging and rewarding form of research with more confidence. The guidelines recommend that design considerations focus on obtaining information about the context, process and the meaning systems of social actors within an organization. Context is concerned with a holistic analysis of the various systems and structures within which the case organization is embedded. To accommodate the constant state of flux in the case organization, a process strand of analysis is required to document changes that take place over time. Meaning is concerned with interpreting and analysing the shared sense of reality and conventions that people generate as they interact in organizations. This paper also offers guidelines for assessing the quality of an interpretive case study. Future guidelines should assist students in conducting critical interpretive case studies that critique the abuse of power, knowledge, and ideology in organizations and empower the marginalised, and decolonizing interpretive case studies that defy the hegemonic traditions of western business and management research.

**Keywords:** case study, interpretive, qualitative research, doctoral students, research methods, business

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## 1. Introduction

The breadth of research approaches embraced in business and management studies poses curriculum challenges for educators teaching research methods, mentoring challenges for study leaders, assessment challenges for examiners and reviewers, and practical design challenges for inexperienced doctoral researchers. This problem is exacerbated by the fact that many research methods textbooks assume that research designs generally follow the formula espoused by positivist research. Design in positivist research involves defining the theoretical concepts/constructs that address the research question(s), operationalizing these constructs in the form of measurable variables, establishing the relationships between these variables in the form of hypotheses, establishing a plan to test these relationships by collecting data from an appropriate sample of the target population, conducting the analysis using statistical techniques, and assessing the reliability, validity and generalizability of the results. While there are some common design elements across research designs irrespective of the research approach, the positivist design formula is not appropriate for a number of research approaches embraced in business and management studies, especially those forms of research conducted under the umbrella of the interpretive social science. This paper will not attempt to provide guidelines for all forms of research in the interpretive social science but will focus on one fruitful approach for business and management research: a single interpretive case study built on a hermeneutical philosophical base.

Case studies designed to be consistent with positivist criteria have achieved greater legitimacy as a research approach in business and management compared to interpretive case study research. Staunch critics of interpretive research continue to view interpretive case study research as exploratory research that serves more advanced quantitative research (Stahl, 2013). One of the strongest criticisms is directed at issues relating to the lack of statistical generalizability (Lee, 1989). Another major criticism relates to its lack of rigor in sampling, data collection and analysis of the empirical data (Baskarada, 2014; Polzer & Tushman, 2009).

Despite these criticisms, the use of interpretive approaches in business and management has increased substantially over the years (Myers, 1998; Walsham, 2006). Advocates of interpretive approaches claim that

the methodological procedures and quality criteria for positivism are not appropriate for advancing our understanding of business and management phenomena (Orlikowski & Baroudi, 1991; Geoff Walsham, 2006).

Proponents of interpretive case study research in particular have tried to improve the legitimacy of interpretive research by providing guidance on how to conduct high quality interpretive case study research (Myers, 2017). However, they tend to offer guidelines that are vague or pertain to specific design elements which lead to more confusion among students. For example, Carroll & Swatman (2000) provide guidance on the theory building aspects of interpretive IS research. Atkins & Sampson's (2002) set of appraisal guidelines for assessing single case studies develops criteria that are more in line with positivist approaches. Klein and Myers' (1999) principles for conducting and evaluating interpretive field studies also do not explicitly discuss the implications of their principles for the design of an interpretive case study. Consequently, a failure to develop a comprehensive and practical set of guidelines for interpretive case study has left it with a stigma of being non-scientific and unsystematic, in some circles.

Business and management students are familiar with the case method in teaching that sometimes draws from the content of case study research in the classroom to develop the student's problem-solving abilities. The case method should not be confused with case study research. Yin (1999) defines case study research more broadly as an empirical enquiry that investigates a contemporary issue or event within its real life context, especially where the boundary between such issues or events and its context is not clearly defined. Similarly Merriam (1998) defines a case study as an "intensive, holistic description and analysis of a single instance, phenomenon, or social unit." While useful, these definitions do not capture the essence of interpretive case studies in business and management. Myers (2009) defines case study research in business and management as the use of "empirical evidence from one or more organizations where an attempt is made to study the subject matter in context." He views interpretive case studies as attempts to understand the subject matter through the meanings that people assign to them. Case studies can be about organizations, teams or events.

Despite these many perspectives of case study research, there is a growing body of writing describing good practice in interpretive case study research. However, this works still lags behind the progress made by positivist case study research. The work on interpretive case study guidelines is also scant and fragmented and so a comprehensive and practical set of design guidelines is not immediately available.

The purpose of this paper is to synthesise information from the relevant literature to develop a comprehensive set of design guidelines that will guide doctoral business and management students undertaking single interpretive case study research. This paper contributes to research methods education in business and management by providing a comprehensive yet practical set of design guidelines that will guide doctoral business and management students. These guidelines will be of benefit to doctoral students working on their research proposal and will also be of interest to academics involved in qualitative research. The next section discusses the ontological and epistemological assumptions that inform design criteria that are distinctive to interpretive research.

## **2. Philosophical foundations of interpretive research**

There are a number of legitimate research approaches within the field of business and management. These approaches are guided by various ontological, epistemological, and methodological assumptions. Lincoln & Guba (1985) assert that researchers should ask themselves three types of questions when trying to understand how they come to know what they know. The ontological question focuses on what is there to be known, what is the nature of reality and what is truth. The epistemological question tackles what is the relationship between the knower and the known (or the knowable), what kind of knowledge can be obtained and what are the limits of knowledge. The methodological question deals with what are the ways of finding out knowledge i.e. how can we go about finding out things?

The interpretive researcher is concerned with how people create and maintain their social worlds. The goal of the interpretive researcher is to develop an understanding of social life and discover how people construct meaning in their natural settings (Gill, 2014; Walsham, 1995). This approach holds that social life is based on social interactions and socially constructed meaning systems and therefore people possess an internally experienced sense of reality (Walsham, 1995). Understanding this subjective as well as intersubjective sense of reality is crucial to grasping social life (Johnson, Buehring, Cassell, & Symon, 2007). In contrast, positivists



maintain that social and physical reality is real and exists “out there”. It follows that the epistemological position is that understandings of reality and all knowledge is a social construction and thus subjective, and this subjectivity applies to the researcher as well. Positivists view the purpose of research as scientific explanation (Lee, 2017; Lee, 1989; Orlikowski & Baroudi, 1991). Furthermore, positivists believe that basic patterns of social reality are stable making the world logical and predictable. Positivists believe laws and theories in business and management should be expressed in formal symbolic systems, with axioms, corollaries, postulates and theorems (Orlikowski & Baroudi, 1991). Consequently, the conduct of research also has an instrumental orientation assuming that knowledge can be used to predict and control the business environment (Lee, 2017). Some scholars believe that positivist and interpretive approaches are compatible despite their seemingly irreconcilable philosophical differences (Lee, 2017; Mingers, 2001).

Critical interpretive researchers conduct research to critique and transform social relations (Myers & Klein, 2011). The critical perspective agrees with many of the criticisms that the interpretive approach directs at positivism, but it also disagrees with interpretivism on a few aspects. Critical researchers criticise the positivists for being myopic, antidemocratic and non-humanist in their use of reason. It criticises positivism for failing to deal with the meanings of real people and their capacity to feel and think (Neuman, 1997). It also asserts that positivism ignores the social context and argues that positivists defend the status quo because they assume an unchanging social order instead of viewing current society as a particular stage in an ongoing process. They also criticise the interpretive approach for being too subjective and relativist, amoral and passive. In contrast to interpretive researchers, critical researchers take a strong value position in order to help people see false illusions around them so that they can improve their lives (Myers & Klein, 2011). Postmodern research has also challenged interpretive research for legitimising powerful discourses that pressure people into having meaning-systems and neglecting the use of ideology by those in power to distort the interpretations of unaware individuals (Garrick, 1999). Decolonizing interpretive research is also seeking to reveal the hegemonic and colonizing traditions embedded in mainstream interpretive research and the erroneous western claims made by mainstream interpretive research about subaltern conditions (Darder, 2018).

### **3. Qualitative research**

Whereas quantitative data are evaluated using descriptive and inferential statistics drawing on realist-objectivist assumptions in the form of numbers, qualitative data usually reduce words to themes or categories that are evaluated subjectively (Merriam, 1985). Qualitative research is more suitable for studies that are rich in detailed descriptions around context and process (Pettigrew, 2019). Whereas the qualitative-positivist researcher is apt to record a small set of previously identified variables (Lee, 1989), the qualitative-interpretive researcher seeks a socially rich, in-depth understanding and would argue that experimental and quasi-experimental methods cannot do justice to describing the complexity of organizational phenomena (Walsham, 1995).

Qualitative researchers in general can make use of interviews, hermeneutic inquiry, survey research, participant observation and even statistics (Myers, 2009). However, qualitative-interpretive research implies an emphasis on context, processes and meanings over measures of quantity, intensity and frequency (Walsham, 1995). Although there is great heterogeneity within the literature on interpretive-qualitative methodologies, they generally share three fundamental assumptions (Patton, 2001): a holistic view, an inductive approach, and naturalistic inquiry. Firstly, the holistic approach stresses that the whole is different from the sum of its parts. Consequently, interpretive-qualitative methods seek to understand phenomena in their entirety in order to develop a more complete understanding of a person, program, or situation (Stake, 2006). This is in contrast to qualitative-positivist research which aims to isolate and measure narrowly defined variables, and where understanding is tantamount to prediction and control (Lee, 1989). Secondly, qualitative-interpretive research begins with specific observation and moves toward the development of general patterns that emerge from the case or cases under study (Spiggle, 1994). Unlike with qualitative-positivist, the qualitative-interpretive researcher uses an inductive approach, which does not impose much of a conceptual structure or make assumptions about the interrelationships among data, prior to making observations. This is, of course quite different from the hypothetico-deductive approach in positivist designs that prescribes specification of variables and hypotheses prior to data collection (Kaplan & Maxwell, 2005). Lastly, qualitative-interpretive research is more suitable for understanding phenomena in their natural context (Polzer & Tushman, 2009; Ponelis, 2015).

#### 4. The interpretive case study approach

The interpretive case study method is chosen because of its advantages in creating novel and profound insights and its focus on examining the rich social, cultural and political influences in an organisational context (Walsham, 1995). The interpretive case study approach is especially useful in novel situations where contextual conditions of the events being studied are critical (Davison & Martinsons, 2016) and where the researcher has no control over the events as they unfold (Boland & Day, 1989).

While case studies are normally associated with qualitative research, they might also be classified as positivist, critical or interpretive according to epistemological and ontological assumptions adopted. According to Walsham (1995), a case study strategy is the most appropriate method for conducting empirical research in the interpretive tradition. Yin (2017) also endorses the study of single facilities explaining that a single case can often produce richer insights. Most researchers justify the selection of a case study design based on the nature of their research problem and the questions being asked. Their central argument is that the interpretive case study offers a means of investigating complex social aspects in which multiple variables are intertwined. They also tend to argue that the case study approach is a particularly appealing design for applied fields of study such as business and management. In fact, a number of researchers have demonstrated the effectiveness of case studies in bringing about a broader understanding of organizational processes and the potential to perhaps improve practice. In addition, the case study approach allows for “thick descriptions” of phenomena under study (Johnson et al., 2007). Such ‘thick descriptions’ give the researcher access to the subtleties of changing and multiple interpretations (Cassell, Bishop, Symon, Johnson, & Buehring, 2009), which would be lost in quantitative or experimental strategies (Walsham, 2006).

Despite its popular appeal among business and management researchers, the interpretive case study strategy has been subjected to many criticisms (Stahl, 2013). The strongest criticisms are directed at issues relating to the non-representativeness and lack of statistical generalizability of case study research (Lee, 1989). Some scholars argue that case studies are used for analytical generalizations, where the researcher’s aim is to generalize a particular set of results to some broader theoretical propositions (Baskerville & Lee, 2003; Yin, 2017). In other words the generalisation of results from a case study is made to theory and not to populations.

If one adopts a positivist epistemological stance, then statistical generalizability is relevant. Indeed when studying social contexts of varied actions and interpretations it is an unsound practice to group together organisations with radically different social histories and organisational setting (Sarker & Sahay, 2004).

Another major criticism directed at the case study strategy relates to its lack of rigor (Johnson et al., 2007; Verner, Sampson, Tomic, Abu Bakar, & Kitchenham, 2009). This lack of rigor is also linked to the problem of bias introduced by the subjectivity of the researcher. A number of authors provide a positivist definition to what they consider rigorous and scientific adequacy. These include criteria such as *construct validity*, *internal validity*, *external validity* and *reliability* (Lee 1989; Yin, 2017).

Nevertheless, a single in-depth case study strategy from an interpretive point of view can also benefit from incorporating the rigours in designing and collecting data (Shanks, 2002; Lee, 2017). Lincoln & Guba (1985) assert that while positivist criteria may be perfectly reasonable and appropriate in a positivist paradigm, they are not particularly meaningful in the constructivist (interpretive) tradition. They offer the following alternative criteria. These include confirmability, credibility, transferability and dependability. As a way of further improving the quality of research conducted from the interpretive perspective, Myers & Klein (2011) proposed a set of principles based on the hermeneutic orientation. The set of principles is as follows: (i) the hermeneutic circle, (ii) contextualization, (iii) interaction between the researcher and the subject, (iv) abstraction and generalization, (v) dialogical reasoning, (vi) multiple interpretations and (vii) suspicion. The main aim of this set of principles is to improve the plausibility and cogency of the research by telling a ‘good’ story (Remenyi, 2013). Atkins and Sampson (2002) also provided a comprehensive guideline for the conduct of a single case study. Their guidelines emerged through a synthesis of leading research work of case studies (Klein and Myers, 1999; Walsham, 1995; Yin, 1984). However, many of the guidelines offered so far tend to be vague or pertain to specific design elements. Unfortunately, there are no explicit guidelines for conducting critical interpretive case studies that focus on the dynamics of power, knowledge, and ideology that shape and reproduce inequality in social practices (Myers & Klein, 2011).

## 5. Practical guidelines for designing an interpretive case study

Research design is necessary to convince the academic community that the researcher has the ability to plan a complex research project, that the project proposed is feasible, that the researcher is able to evaluate and justify the design alternatives selected, and that the researcher belongs to an epistemic community. The guidelines for conducting interpretive case study research presented next are consistent with the ontological, epistemological and methodological assumptions for interpretive studies discussed in the prior sections.

Interpretive case study designs should be meaning-focused, process-focused and context-specific. The design guidelines in Table 1 do not suggest that interpretive case study designs can be predetermined. They are meant to be adopted in a reflexive manner.

**Table 1:** Guidelines for designing an interpretive case study

Design aspects	Description of Guideline	Authors
Problem Statement/ Research questions	<ul style="list-style-type: none"> <li>Business and management case studies should focus on complex, situated and problematic relationships.</li> <li>Use abductive reasoning by beginning with a puzzle or anomaly, and raise questions that may provide possible explanations for the problem.</li> <li>Ask how and why research questions. E.g. how and why was the business merger successful?</li> <li>Research questions should be developed by employing a recursive and reiterative process between the researcher's experience, the literature and data from the field.</li> </ul>	(Choudhury Kaul, Sandhu, & Alam, 2019; Gummesson, 2003)  (Alvesson & Sandberg, 2011)
Philosophical perspectives	<ul style="list-style-type: none"> <li>Justify why this case study research is of an interpretive nature which assumes that social reality is socially constructed.</li> </ul>	(M. Myers & Klein, 2001; Orlikowski & Baroudi, 1991; Walsham, 2006)
Qualitative approaches	<ul style="list-style-type: none"> <li>Justify why description, understanding, meaning and the experiences of people are important in this study.</li> </ul>	(Tsoukas, 2005; Yazan, 2015)
Case study strategy	<ul style="list-style-type: none"> <li>Justify the focus on a single unit, bounded system or context.</li> </ul>	(Atkins & Sampson, 2002; Myers, 1994)
Literature/ Theoretical framework(s)	<ul style="list-style-type: none"> <li>Review the literature crucial to your study to shape the problem statement and help identify a theoretical framework.</li> <li>Explain how a theoretical/conceptual framework provides key sensitising concepts and constructs, helps to focus the research problem, specifies the research question(s), guides data collection, analyses data, and helps interpret the findings.</li> </ul>	(Bowen, 2006; Watson, 2002)
Unit of analysis	<ul style="list-style-type: none"> <li>Use a criterion-based selection approach that reflects the purpose of the study to purposively select your unit of analysis. E.g. Ask what constitutes a successful business merger?</li> </ul>	(Merriam, 1998)
Case study site	<ul style="list-style-type: none"> <li>Provide reasons for selecting and investigating the case.</li> <li>Describe how entrance to the site was obtained.</li> <li>Provide a brief description of the context of the study.</li> </ul>	(Merriam, 1985; Yin, 2017)
Data sources	<ul style="list-style-type: none"> <li>Although sampling is non-probabilistic, ensure that it is purposive or theoretical. Avoid convenience sampling.</li> <li>Ensure that the data collected include(s) both primary and secondary sources.                             <ul style="list-style-type: none"> <li>Primary data sources should include face-to-face semi structured interviews with key informants of the study.</li> <li>Ensure that informants represent diverse perspectives about the phenomenon.</li> </ul> </li> <li>This should be supplemented by secondary data in the form of internal documents.                             <ul style="list-style-type: none"> <li>Documents are useful for providing insights about the context.</li> </ul> </li> <li>Observations may also be used to supplement the data sources.</li> </ul>	(Merriam, 1985; Myers, 2009; Yin, 2017)
Data collection	<ul style="list-style-type: none"> <li>Use interviews to generate rich descriptions of the informant's lived experience at work.</li> <li>Employ an iterative process for data collection and analysis to ensure richer and deeper interpretation.</li> <li>Ensure that there is not a rigid separation between data collection and analysis. The results of the analysis in one period should help guide the subsequent collection of data.</li> <li>Digitally record the interviews to retain their exact content.</li> <li>Ensure verbatim transcription of interviews and keep clear field notes.</li> </ul>	(Merriam, 1985; Myers, 2009; Yin, 2017)
Data analysis	<ul style="list-style-type: none"> <li>Use the constant comparative method as detailed in "grounded theory" to systematically code the data into as many themes and categories as</li> </ul>	(Merriam, 1985; Myers, 2009; Yin, 2017)

Design aspects	Description of Guideline	Authors
	<p>possible.</p> <ul style="list-style-type: none"> <li>• Use the concepts from the initial theoretical/conceptual framework(s) as sensitising concepts to guide the analytical process.</li> <li>• Ensure that patterns, themes, and categories of analysis emerge from the data inductively.</li> <li>• Focus analysis on context, processes, meanings and outcomes.</li> <li>• Repeat the cycle and develop and elaborate on the theory/concepts as the process continues.</li> <li>• Use Qualitative Data Analysis Software (QDAS) such as ATLAS.ti to code and store these themes and categories using the coding text and writing memos features.</li> <li>• Use a QDAS for the overall data management of the research project and its associated data. This archive should include the interview transcripts, case study field notes, case study documents, quantitative data and other electronic files generated during the case study.</li> </ul>	
Limitations	<ul style="list-style-type: none"> <li>• Argue for analytical generalization and not statistical generalisation.</li> </ul>	(Baskerville & Lee, 2003; Walsham, 2006)
Quality Assessment	<ul style="list-style-type: none"> <li>• Apply criteria for interpretive research, such as confirmability, credibility, transferability and dependability, to assess the quality of the case study.</li> <li>• Ensure that story is plausible - in other words, other researchers are convinced that the story is 'real' or sounds familiar.</li> <li>• QDAS can facilitate an independent audit of data collection and analysis if required.</li> <li>• Avoid applying positivist criteria, such as reliability and validity.</li> </ul>	(Lincoln & Guba, 1985) (Iivari, 2018)  (Rowlands, 2005; Remenyi, 2013)  (Kaplan & Maxwell, 2005)
Research ethics	<ul style="list-style-type: none"> <li>• Research ethics need to be integrated into the design. <ul style="list-style-type: none"> <li>○ Obtain informed consent from the organization and informants before collecting data.</li> <li>○ Ensure the confidentiality and privacy of the organization and participants.</li> <li>○ Handle sensitive results with care.</li> </ul> </li> </ul>	(Runeson & Höst, 2009)

There is no “perfect” checklist system that can account for all the issues an interpretive case study research would need to consider in practice. In articulating a research design, it is important to be as transparent as possible.

## 6. Conclusion

The key difference between an interpretive and a positivist case study resides in their epistemological and ontological positions. The positivists maintain that scientific knowledge consists of facts, and reality is independent of social construction. This contrasts with the inter-subjective and socially constructed epistemology and ontology of the interpretive stance. The guidelines presented in this paper are compatible with the ontological, epistemological and methodological assumptions of interpretive research. These guidelines are essential for business and management doctoral students embarking on an interpretive case study project. The guidelines recommend that business and management doctoral students undertaking an interpretive case study should consider key design aspects, such as *the research problem, philosophical perspectives, qualitative approach, case study strategy, theoretical framework, the case study site, unit of analysis, data sources, data collection, data analysis and ethics*. Interpretive case studies are an important research approach within business and management studies. They are particularly adept at explaining peculiar social action that calls for an in-depth understanding of meaning and process within an organizational context. Future guidelines should assist students in conducting critical interpretive case studies that address the power dynamics and the social injustices facing marginalised groups in organizations.

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# An Illustration of Deductive Analysis in Qualitative Research

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**Abstract:** Deductive qualitative research takes as its departure point, the theoretical propositions that are derived from a review of the literature and applies these to the collection and analysis of data. However, most qualitative studies in business-related research have adopted an inductive approach, with only a few examples of deductive qualitative studies. Deductive qualitative research procedures have the potential to address some of the shortcomings of inductive approaches, including a more systematic development of a body of knowledge of behavioural and social processes that take place in business. Unfortunately, since deductive qualitative analysis has been neglected, there is little guidance and few examples offered that illustrate the application of these techniques. This poses a challenge for researchers who often need a greater level of structure when it comes to designing and conducting their research. Therefore, the aim of this paper is to illustrate the design of research protocol that integrates two deductive approaches that are suitable for case study research, namely deductive thematic analysis and pattern matching. Using the personal change theory of Fogg, this paper develops a step-wise process for carrying out deductive qualitative research that researchers can follow, integrating the use of pattern matching and deductive thematic analysis. In doing so, it also illustrates the research design phase of this process, including the development of propositions, the drafting of a code book, and the formulation of a question matrix.

**Keywords:** thematic analysis, pattern matching, case study research, deductive qualitative analysis, personal change

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## 1. Introduction

There is proportionately less qualitative research published in business research when compared to studies of a quantitative nature (Bryman 2004; Fischer, Dietz, & Antonakis 2017). The consequence of this relative neglect of qualitative research is that there is a superficial understanding of, and little theory development related to the behavioural and social processes that take place in organisations and business (see for example, Brown 2018; DeRue & Ashford 2010; Fischer et al. 2017) and research results have become removed from real experiences and behaviours (Higgs & Rowland 2011). On the other hand, referring to leadership research in particular, Bryman (2004), bemoans the tendency of qualitative researchers who – in adopting an ideographic and inductive approach - do not engage in prior theoretical conjecture. As a result, they do not build upon the work of other researchers, thereby undermining attempts to build a body of knowledge that is distinctive to qualitative leadership research.

Deductive qualitative research is differentiated from other qualitative approaches in that it takes as its departure point, the theoretical propositions that are derived from a review of the literature and applies these to the collection and analysis of data (Boyatzis 1998; Fereday & Muir-Cochrane 2006; Hyde 2000). The appeal of deductive qualitative analysis is evident in its recommended use in case studies, with Robert Yin (Yin 2014) - widely regarded as a major proponent of the case study method - having adopted a deductive approach (Riege 2003) in the development of his version of the case study method. Deductive analysis is particularly relevant for explanatory case studies (Fisher & Ziviani 2004). However, only a small portion of qualitative studies have adopted a deductive approach (e.g. Denis, Langley, & Pineault 2000). Since deductive qualitative analysis has been neglected, there is little guidance and few examples offered that illustrate the application of these techniques. This poses a challenge for students and novice researchers in particular, who need a greater level of structure when it comes to designing and conducting their research. Therefore, the aim of this paper is to illustrate the combined application of two deductive analytical approaches that are suitable for case study research design, namely deductive thematic analysis and pattern matching.

## 2. Deductive Thematic Analysis

“Thematic analysis is a method for identifying, analysing and reporting patterns (themes) within data” (Braun & Clarke 2006, p. 79). Thematic analysis is used regularly and flexibly in qualitative data analysis, and there have been several attempts to provide a more systematic approach to its use, with most authors combining deductive and inductive versions to create a hybrid approach (Braun & Clarke 2006; Fereday & Muir-Cochrane 2006; Rishi, Jauhari, & Joshi 2015), while a few set out differentiated processes for these alternatives (see for example, Boyatzis 1998).

The deductive version of thematic analysis, or theoretically-driven coding, uses theory as its point of departure (Boyatzis 1998). Jones et al. (2018) illustrate how theory informed their analysis, with their coding frame based on the conceptualization of community capacity that was developed by Edwards (2015). Boyatzis (1998) and Fereday and Muir-Cochrane (2006) describe and illustrate the steps of deductive thematic analysis, which include: (1) Considering sampling and design issues; (2) Developing the code manual (This entails labelling, defining and describing when the theme occurs); (3) Validating or testing the reliability of the code; (4) Summarizing data and identifying initial themes; (5) Applying the template of codes and additional coding; (6) Connecting the codes and identifying themes; and (7) Corroborating and legitimating coded themes.

### 3. Pattern matching

Pattern matching was originally described by Campbell (1975) and is one of the forms of analysis that is recommended for case study research (Hyde 2000; Yin 2014), particularly to enhance the internal validity of the study (Gibbert, Ruigrok, & Wicki 2008). Pattern matching has its origins in quantitative studies using small samples (Campbell 1975). Its usefulness and appeal was in identifying patterns in small data sets and in testing hypotheses, but it can also be used qualitatively and in this qualitative form, complements deductive thematic analysis techniques (Hyde 2000).

Pattern matching involves identifying the patterns in data, and then comparing this against one or more patterns that are proposed in the literature (Almutairi, Gardner, & McCarthy 2014; Gibbert et al. 2008). The theory to be tested is stated before starting with data-gathering (Hyde 2000). Two alternate theories (or more) are put forward for testing, which typically set out competing patterns of outcomes that are then tested empirically (Almutairi et al. 2014). These patterns may contain one or more dependent variables that are related to one or more independent variables (Almutairi et al. 2014). Examples of leadership studies that have used pattern matching include Denis et al. (2000), who have combined managerial control and socialisation perspectives to explore the integration of a new leader into an organisation, while Murphy and Ensher (2008) applied pattern matching to investigate if the leadership behaviour of television directors matches the theory of charismatic leadership.

Pattern matching typically requires analysing several cases or incidents. See Hyde's (2000) application in testing the models "independent travel as evolving itinerary" versus "independent travel as planned itinerary" as an example. However, pattern matching can be used when conducting research on a single case, and by using at least two differentiated theories in the process of data collection and analysis (Yin 1981). In the selection of a single case, Yin (1981) notes that this is based on the occurrence of a phenomenon in its real life context, since case study research is concerned with the occurrence of a phenomenon in, and is not divorced from its dynamic context, but rather inseparable from it. He further notes that a non-exemplary case may be intentionally selected because it seems to disconfirm the conventional explanation or theory. In this way, he argues, single cases provide valid tests of a theory; but also do so by following an ideographic approach rather than a nomothetic one. While there may be some scepticism in using a single case, the depth and contextual insights from single case studies have proven to be useful in the past for building theory (Dyer & Wilkins 1991).

Furthermore, according to Yin (1981, p. 108) "data from a single case can be used to test a theory (i.e., a pattern), as long as contrary theories are also compared". Later, Yin (2003, p. 118) argues that each of these alternate explanations or "rival theoretical propositions ... involves a pattern of independent variables that is mutually exclusive. If one explanation is to be valid the others cannot be". However, this is not necessarily the case, as it is possible for different theories to complement one another to provide a fuller explanation of a phenomenon, prompting the use of theory triangulation (Hopper & Hoque 2006).

According to Hyde (2000, p. 86) pattern matching involves the following steps: "(1) theoretical propositions are stated before data-gathering commences; (2) a counter-theory is also stated; (3) a case-by-case comparison of the deductive dataset with the theory and the counter-theory is undertaken by independent judges; (4) a record of hits and misses is recorded".

### 4. A Research Procedure for Deductive Qualitative Research

As indicated earlier, the aim of this paper is to illustrate the combined application of deductive thematic analysis and pattern matching. In fulfilling this aim, the first objective is to set out a clear procedure for researchers to follow, who are interested in conducting deductive qualitative research. In support of this



objective, additional sources are identified that illustrate many of these steps, and which researchers can refer to, thereby providing further assistance to researchers. The second objective is to illustrate the research design phase of this process using an example of an investigation into personal change.

In order to combine deductive thematic analysis and pattern matching in a coherent manner, the following seven steps are suggested:

#### **4.1 Step 1: Conceptual Framework**

Conducting a literature review should culminate in a conceptual framework for the study. “A conceptual framework explains, either graphically or in narrative form, the main things to be studied—the key factors, variables, or constructs—and the presumed interrelationships among them. Frameworks can be simple or elaborate, commonsensical or theory driven, descriptive or causal. ... A conceptual framework forces you to be selective—to decide which variables are most important, which relationships are likely to be most meaningful, and, as a consequence, what information should be collected and analyzed—at least at the outset” (Miles, Huberman, & Saldaña 2014, p. 37). Examples of such frameworks are Uysal & Tsetsura (2015) who explore stakeholder activism and the process and outcomes related to shareholder resolutions. When pattern matching is being applied, there will be at least two frameworks, one for each of the competing theories, but these can be integrated into a single figure or framework. See the initial conceptual model of Denis, Langley, and Pineault (2000) as an example of this.

#### **4.2 Step 2: Propositions**

From the frameworks, the propositions that will be researched are identified. See DeRue and Ashford (2010), Murphy and Ensher (2008) and Yukl (2008) for examples of how to develop propositions.

#### **4.3 Step 3: Code Book**

Based on the propositions, the researcher can develop a code book (see Boyatzis 1998; Crabtree and Miller 1992; Fereday and Muir-Cochrane 2006). A preliminary code book can be developed based on the conceptual model that is developed from the literature review (Crabtree & Miller 1992). This codebook can be expanded into a coding memorandum, whereby each code has a label or name; a definition; and a description of qualifiers and exclusions that demonstrate when it occurs or not, as illustrated by Boyatzis (1998) and Fereday and Muir-Cochrane (2006).

#### **4.4 Step 4: Question Matrix**

If data is to be collected by interviews, then based on the codebook, interview questions for different interviewee groups can be generated, taking all competing theories and their propositions into account.

Following the example of Castillo-Montoya (2016) a question matrix can be developed to ensure that the questions that are asked in the interview will solicit responses relevant to testing the propositions of the research.

#### **4.5 Step 5: Data Collection**

Using the question matrix or equivalent guidelines and protocols, research data is collected. The case study method also supports the collection of different types and sources of data (Yin 2014).

#### **4.6 Step 6: Analysis**

The analysis of data consists of three stages. Firstly, the code book is applied to the analysis of the data collected. This involves reviewing, revising and/or confirming that the codes do in fact appear in the data by finding examples (Boyatzis 1998). Furthermore, Yukhymenko et al. (2014) promote an extension of the analysis beyond the theoretical propositions that are derived from the literature review. They make a distinction between “confirmed themes” and “added themes” and encourage researchers to add to the code book, *if* additional codes are identified in the data. From the perspective of a deductive qualitative approach, this should be viewed as an exception, rather than a normal practice, as extant theory is being tested.

Secondly, themes are identified. A theme “represents some level of patterned response or meaning within the data set” (Braun & Clarke 2006, p. 82). Themes therefore arise from connecting codes to one another and thereby identifying patterns in the data (Fereday & Muir-Cochrane 2006). From the perspective of a deductive approach, identifying themes involves looking for evidence in the data of the patterns that were articulated in

the propositions of the study. At this point, pattern matching is applied, as the researcher compares the dataset with the competing frameworks, or theories. Finally, for the propositions of each theory, a record of hits and misses is kept to identify which theory best fits the data (Hyde, 2000), while also applying theoretical triangulation to analyse how the theories complement each other (Hopper and Hoque, 2006).

#### 4.7 Step 7: Reporting

The findings are written up, initially focusing on one theory at a time, followed by an integrated section showing how the theories “work together”; but also acknowledging any contradictions or tensions between them that may arise.

### 5. An Illustration of Designing Deductive Qualitative Research

The research problem that is to be illustrated, is “How do individuals change their behaviour so as to adopt a healthier lifestyle?” This problem arises from the context of the promotion of Sustainable Development Goal 3: ‘Good health and well-being’ (United Nations 2016). It is also recognised that non-communicable diseases (NCDs), which are the leading cause of deaths worldwide (World Health Organization 2018a), can be prevented through the adoption of a healthier lifestyle characterised by: healthy diets that have low levels of salt, sugar and fat; physical activity; and the reduced use (or preferably abstinence) of alcohol and tobacco products (World Health Organization 2018b).

This example has been selected for several reasons. Firstly, research students can easily relate to the research problem, and so the example can be extended in the classroom by having students interview each other to generate data and then analyse the data collected. Secondly, from the perspective of organisational leadership and change management, the problem of how people change their behaviour is also important in the context of leader-led organisational change. Therefore, the application can be relatively easily transferred to an organisation context.

Using the personal change theory of Fogg (2009), the application of pattern matching and deductive thematic analysis in designing the research is now illustrated by (1) the development of propositions, (2) the drafting of a code book, and (3) the formulation of a question matrix.

Fogg (2009) argues that personal behavioural change arises due to three factors, namely: triggers, motivation and ability/simplicity. That is, a person must be triggered to perform, motivated enough to perform, and have the ability to perform the required behaviour (or preferably, find it simple or easy to adopt the change of behaviour). For the sake of simplifying this illustration, these three factors are treated as separate explanations, or patterns of behavioural change, rather than seeing them as one theoretical explanation. This produces three propositions, namely:

- Proposition 1 - Triggers: An individual is more likely to adopt a healthier lifestyle when there are triggers (such as a spark, facilitator or signal) for the behavioural change.
- Proposition 2 - Motivation: An individual is more likely to adopt a healthier lifestyle when motivated to do so (by pleasure, hope, or acceptance, or the avoidance of pain, fear and rejection).
- Proposition 3 - Ability/simplicity: An individual is more likely to adopt a healthier lifestyle when it is simple or easy to do so (requiring little time, money, physical or mental effort, is not socially deviant, and fits with current routines).

A Code Book has been developed based on these three propositions and is illustrated in Table 1. Assuming that data will be collected through interviews, a Question Matrix has also been developed (See Table 2). It should be noted that these questions are starting, open-ended questions, taking the form of “What?”, “How?” and “Why?” in line with the typical objectives of case study research, and to encourage dialogue through follow-up questions.

**Table 1:** Illustration of a Code book based on Fogg’s Theory of Behavioural Change

Trigger codes	Motivation codes	Ability/simplicity codes	Healthy lifestyle codes
TRSP = Trigger Spark TRF = Trigger Facilitator TRSIG = Trigger Signal	MOTPLS+ = motivated by pleasure MOTHP+ = motivated by hope MOTACC+ = motivated acceptance MOTPN- = motivated by avoidance of pain	SIMTIME = simplicity of time SIM\$\$ = costs little money SIMPHYS = takes little physical effort SIMMENT = takes little mental	SALT = changed diet with lower salt intake SUG = change diet with lower sugar intake FAT = change diet with lower

Trigger codes	Motivation codes	Ability/simplicity codes	Healthy lifestyle codes
	MOTFR- = motivated by avoidance of fear MOTREJ- = motivated by avoidance of rejection	effort SIMSOC = not socially deviant SIMROUT = fits with current routines	fat intake PHYS = increased physical activity ALCLOW = reduced use of alcohol ALCABS = abstinence of alcohol TOBLOW = reduced use of tobacco products TOBABS = abstinence of tobacco products

**Table 2:** Question Matrix of Interview Questions Matched Against Propositions

	Background	Proposition 1: Triggers	Proposition 2: Motivation	Proposition 3: Ability/ simplicity
<b>Questions for all interviewees</b>				
What behaviour did you change this year so that you successfully adopted a healthier lifestyle?	Qualifying question			
Why did you choose to focus on that aspect of a healthy lifestyle?	X			
Why did you choose to focus on that behaviour?	X	X	X	X
How did you plan to change your behaviour?	X	X	X	X
What have you done about it so far?	X			
Was there any specific incident that <i>sparked</i> this decision to live more healthily?		X		
What <i>triggers</i> have made this change easier to implement?		X		
What <i>signals</i> are there that remind you (each day) to live more healthily?		X		
What has motivated you to make this behavioural change?			X	
<i>Possible follow up questions on motivation and behavioural change:</i>				
<ul style="list-style-type: none"> <li>• Does making this change give you any <i>pleasure</i>?</li> <li>• Does making this change give you a sense of <i>hope</i>?</li> <li>• Are you making this change for anybody other than yourself? [i.e. for social acceptance]</li> <li>• Are you making this change to avoid any <i>pain</i> or discomfort?</li> <li>• Is there anything that you <i>fear</i>, that has motivated you to make this change?</li> <li>• Is there anyone else who will be unhappy if you do not make this change? [i.e. fear rejection]</li> </ul>				
What has made it easy for you to change your behaviour?				X
<i>Possible follow up questions on ability/simplicity and behavioural change:</i>				
<ul style="list-style-type: none"> <li>• How much <i>time</i> does it require?</li> <li>• How much <i>money</i> does it require?</li> <li>• How much <i>physical</i> or <i>mental</i> effort does it require?</li> <li>• Do other people know about this? If so, what do they have to say about it? If not, why not? [i.e. social deviance]</li> <li>• Does it require any changes to your <i>routine</i>?</li> </ul>				
What has made it harder for you to change your behaviour?				X

## 6. Conclusion

From the perspective of teaching and applying research methods, this paper provides a set of guidelines, examples and illustrations for researchers to follow, so that they can carry out deductive qualitative research.

The procedure set out here, is also useful to those who have to carry out research on a single case, in studies of limited scope, such as an MBA half-thesis. It is further hoped that this paper encourages qualitative researchers to adopt deductive approaches to their research, thereby building on the work of others, and contributing to the accumulation of a distinctive body of knowledge on organisational processes that can be attributed to qualitative research.

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# Thinking through a Research Proposal: A Question Approach

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**Abstract:** To set off the thought process behind a research proposal, I propose a framework of questions, rooted in the discourse theory of reasoning. This framework is based on answering three main questions: a broad research question, a more focused research question and a set of investigative questions. At its core is the focused research question which is simply a restatement of the students preferred thesis from a set of alternative answers to the broad research question. Using discourse theory, I argue that is important for the student to “listen” out for alternate answers before settling on a preferred thesis. My underlying motivation for this paper is to improve the efficiency of both the supervision and student research process.

**Keywords:** Research Proposal, Supervision, Postgraduate research

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## 1. Introduction

Many post graduate students from developing countries encounter difficulties in preparing a research proposal (see for example, Brynard, 2005; Lessing & Schulze, 2002; Sonn, 2016). Amongst the guidance from their supervisors, research methods lecturers and research methods books, students face a hotchpotch of ways to think about and write a research proposal. Furthermore, in South Africa, at least, our tertiary education institutions do not offer a formal critical thinking teaching module accessible to the entire student population. Critical thinking modules possess useful content for research students. A critical thinking module includes the criteria for selecting between alternative theories—for example, criteria such as prediction which suggests selecting between two theories the one that can make strong predictions of phenomena; or scope, which suggests selecting between two theories, the one that can predict diverse phenomena. A critical thinking module can also convey the Toulmin method of argument to students and caution them against logical flaws such as confirming the consequent and affirming the antecedent. Added to this, many of our students in developing countries are part-timers who often cannot make time to attend the research workshops in which we attempt to convey to them certain tools for theory building. For the supervisor, all of this can lead to an inefficient and time consuming supervision process; for the student, it can turn into a painful learning journey. As a result, what can be an adventure—playing Sherlock Holmes—into unravelling an interesting research problem can instead turn into an experience that students may desire never to repeat.

One consequence of this is a clogged pipeline of much needed PhD students who can contribute to the knowledge creation and innovation needs of our developing economy.

My underlying motivation for this paper is to improve the efficiency of both the supervision and student research process. To set off the thought process behind a research proposal, I propose a question approach, rooted in discourse theory of reasoning (Graesser, Baggett & Williams, 1996). This framework is based on answering three main questions: a broad research question, a more focused research question and a set of investigative questions. Equally important, this question approach can enable students to review and revise their own writing to check if indeed they have addressed each question. Though many research design and methods books offer important insights on how to frame a research question, much of the advice remains quite abstract and often so disparate to the extent of becoming confusing to students. For example, some suggest that a research question emerges from a problem (Creswell, 1996), others suggest that a research question, as a form of topic, is first required before venturing into the literature review (Grant & Pollock, 2011) and emerging with a problem; and yet others equate a research question with either the problem or purpose statement or the hypotheses themselves. In this paper, I consider hypotheses, propositions and investigative questions as equivalents: they serve as tentative answers to a focused research question. In the following sections, I will put forward a model and then go onto to describe this model. Finally, I will make some recommendations for supervision and teaching.

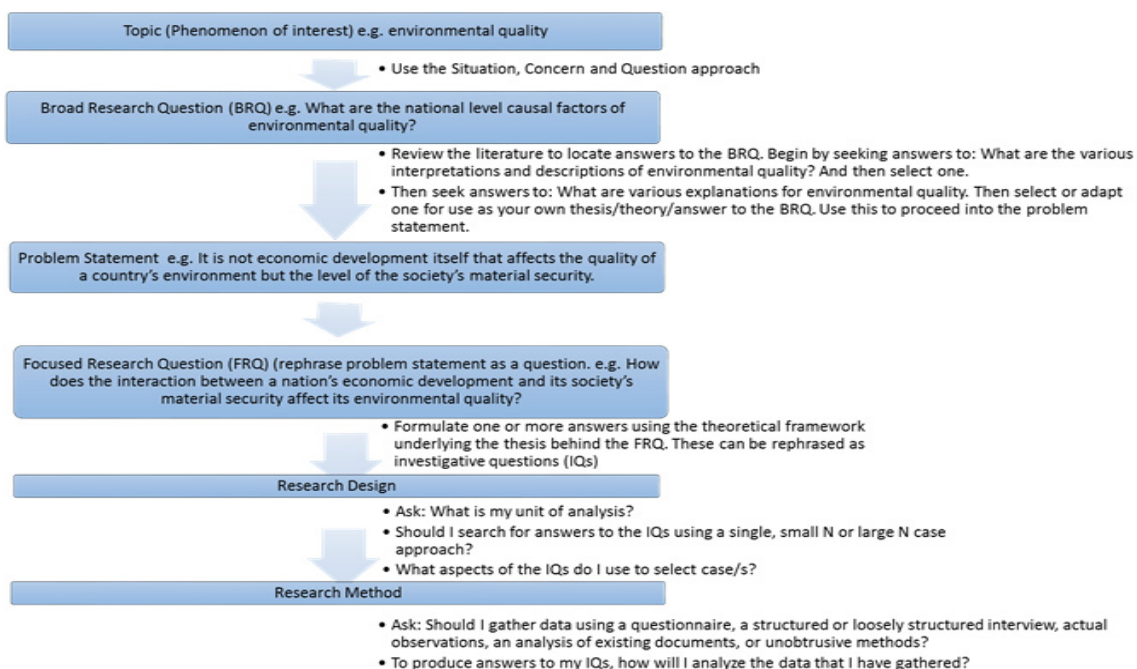
## 2. Thinking through and Writing the Research Proposal

Scientific inquiry starts with particular questions (e.g. White & Frederiksen, 1998). These questions prompt the search for explanations and as a result a theory is developed (Sandoval & Reiser, 2004). The quality of an explanation is primarily evaluated in relation to its value as an answer to the original question before other criteria such as the simplicity, scope and predictions that can be made by the related theory. But before researchers proceed they often think about the questions and respective answers when they develop a research proposal. Thus research proposal writing ought to be seen as part of a thinking process rather than as a product.

A conceptual framework that captures this thinking process and particular question approach can be located in discourse theory of reasoning. This theory proposes that there are multiple agents and voices involved in the reasoning process. In verbal dialogue it is possible for just two agents to communicate their reasoning with one another. Verbal dialogue also allows a quality of collaboration that sees immediate feedback and errors can be corrected quickly (Clark & Schaefer, 1989). But this feedback and collaboration is not available for written communication. A good writer might, however, imagine an audience of one or more agents (Graesser et al, 1996).

When comprehending written and spoken discourse, one implicitly asks and answers explanation-based questions (Chi, de Leeuw, Chiu & LaVancher, 1994). It is important to “listen” to the diverse answers in the literature and later amongst the research participants. To manage the scope of a research project, it is best to develop just one preferred answer into the best available explanation. If students do consider alternative explanations before rejecting them, then it becomes difficult to defend a preferred explanation. Even the preferred explanation should be one that can be contested by other agents in the discourse: readers and future researchers, for example. Ideally, at least two articulated explanations should be required of student literature reviews.

Thus questions serve to prompt a response in a written discourse. Nevertheless, it is helpful to bring forth the metaphor of “listening” for answers. An in the scientific reasoning process, it is valuable to “listen” out for answers that contain alternative interpretations, descriptions and explanations. This metaphor serves as the basis of my framework displayed in Figure 1 below.



**Figure 1:** A Framework for Thinking about and Writing a Research Proposal

In Figure 1, I show a framework for the proposed research writing process. It is framed around three types of questions: a broad research question (BRQ), a more focused research question (FRQ) and a set of investigative questions (IQs). One first begins with a broad topic, from which one locates a situation that one is concerned

about, which can then be used to raise a BRQ. One then used one's own imagination to formulate tentative answers, which prepares one to analyse the existing research literature to pitch these answers against and to seek answers not considered and to select an answer to take forward into the field. By juxtaposing the preferred answer—a thesis—with alternatives one develops a research problem which can be translated into a problem statement and a FRQ. Use the theory underlying the FRQ to propose a few answers to the FRQ. These answers can be framed as hypotheses in a deductive manner from the underlying theory or framed as broad propositions if one wishes to take on a more inductive approach to the research design. In any case, to set one's mind into a "enquiry" mode both hypotheses and propositions can be reframed as IQs, which will help facilitate the thinking required for the research design. The research design can then be further detailed into methods for data collection and analyses.

### **2.1 Arriving at the Broad Research Question**

A useful strategy to use to kick start the research proposal is to convert the topic into a question. This question can put the student into an inquiry frame of mind and can also be used as an instrument to assess the quality of the student's literature review. Beginning with a topic, students locate a situation that concerns them and then they translate this concern into a research question, which at this stage can be very broad and unfocused.

To allow for the exciting experience of learning about multiple and contested theses, it is better, at this early stage, not to take a position: for example, being concerned with the increase in pollution through the rise of manufacturing industries in a developing country a student might ask if economic development reduces a country's environmental quality. At this stage, it might be better to ask more broadly: what influences a country's environmental quality or how can one increase the quality of the nation's natural environment.

### **2.2 Arriving at the Focused Research Question**

The key to arriving at a focused research question is to "listen" out for alternative answers to the BRQ. Alternative answers are likely not just for explaining the phenomenon of interest, but also for interpreting and describing it. Thus one can approach the BRQ by posing two types of sub questions: first an interpretive or descriptive question and then an explanatory question. There will be alternative answers to these questions and it is up to the student to select critically between answers and, of course, reveal his/her reasoning underlying the preferred answers.

Challenging one's assumptions about the meaning of phenomenon of interest and the validity of whether it is indeed such a phenomenon that is taking place in the situation the student is concerned about ought to be the starting point in answering the BRQ. In other words, though it might be useful to develop theories about why the phenomenon is occurring, if the premise is wrong then one has to be wary of expending time and effort in explaining a non-existent phenomenon (de Vaus, 2001).

The interpretive or descriptive question is likely to be a form of: What are the various interpretations and descriptions of this phenomenon of interest. The explanatory question might be of the form: What are various explanations for this phenomenon. Then the student can select or adapt one for use as his/her own thesis/theory/answer to the BRQ. This can be used to proceed into the problem statement.

For example, students may be interested in the phenomenon of the deterioration of their nation's environmental quality (see Powner, 2014). Current research may be unclear about the fact and dimensions of environmental quality. Challenging one's assumptions about the meaning of environment quality and the validity of whether it is indeed deteriorating ought to be the starting point in answering the BRQ. In other words, though it might be useful to develop theories about why there is deteriorating environmental quality, if the premise is wrong (environmental quality is actually improving) then one has to be wary of expending time and effort in explaining a non-existent phenomenon. After reviewing descriptions and interpretations of environmental quality, students should seek multiple theses about why environmental quality is deteriorating.

Theses may sometimes not arise directly but the student might infer them from certain causal factors identified in empirical research. From these multiple theses, the student has to take a position and select a preferred thesis to pursue in his/her research project.

For the above example, let's assume the student has to decide between two rival theories: the nation's increase in economic development has led to its deterioration in environmental quality or the local society's



weak material security has led to its deterioration in environmental quality. Economic development might spur resource overuse and result in declining environmental quality. On the other hand, when nations attain higher levels of economic development, their societies might attain higher levels of material security (see Powner's (2014) example). No longer having to meet their most basic needs such as food and shelter, societies can begin to take time to care about the sustainability of their environment. Policymakers and the politicians who need to obtain votes eventually have to respond to such concerns by adopting environmentally friendly policy that restores past damage and limits further abuse. Eventually the student might settle on the theory that it is not economic development itself that affects the quality of a country's environment but the level of the society's material security.

Because the student needs to get out into the real world of management and organisations to evaluate his/her preferred theory, this theory forms the basis for a research problem. In the above example, the problem statement might be to test the theory that it is not economic development itself that affects the quality of a country's environment but the level of the society's material security. Of course, as part of the problem statement the student must elaborate why this is the preferred thesis. Restated as a FRQ this might become: How does the interaction between a nation's economic development and its society's material security affect its environmental quality?

In the research problem statement, one can utilise critical thinking models (Vaughn, 2008) for justifying the preferred theory. Critical thinking models proposes that students can evaluate the quality of each theory by looking at its:

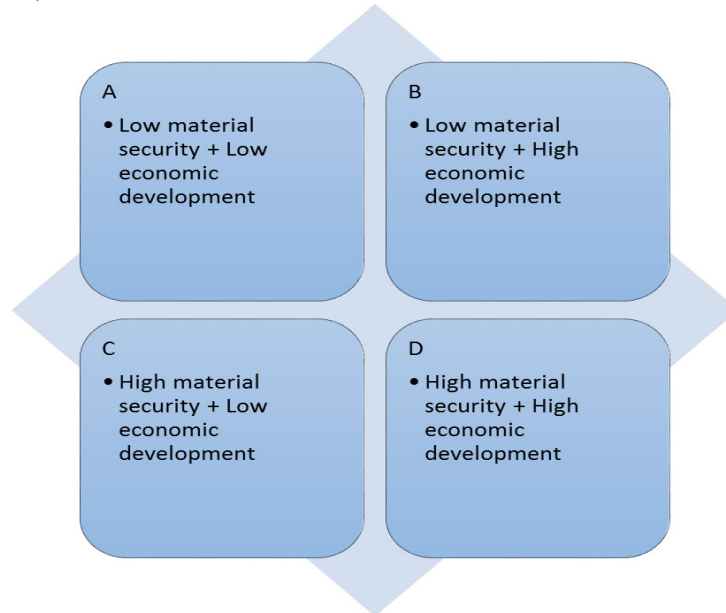
1. Consistency – a theory that is internally consistent is free of internal contradictions in its argument content and structure; a theory that is externally consistent is consistent with the data that it is supposed to explain
2. Testability – is there some way whether the theory is true or false. If a theory is untestable—if there is no plausible procedure for checking its truth—then it is of little or no help in increasing our understanding.
3. Prediction –between two theories the one that can make strong predictions of phenomena will be more useful to us
4. Scope – Between two theories, the one that can predict diverse phenomena will have more scope
5. Simplicity – Between two theories, the better theory makes fewer assumptions. A theory with many assumptions gives rise to more opportunities for it to go wrong. They also make explanations difficult because they must assume the existence of several unknowns. In the social sciences many assumptions have to be made about actors, their motivations, and the choices available to them at any given point. A popular assumption from economic theory is that actors are rational and they weigh both costs and benefits when making choices (Powner, 2014).

When selecting a theory, Vaughn (2008) also cautions students to look out for two flaws in logic:

1. Affirming the consequent (the Y variable or the phenomenon of interest). For example, prior research might have found that if a society's business education does have an economic bias, then that society will experience low environmental quality. So if you locate or argue that a certain society does possess low environmental quality you might be inclined to argue that its business education has an economic bias. It might be the case that the society's business education has a strong social orientation but there are other factors (e.g. material security or economic development) at play causing low environmental quality and that we risk omitting these if we make such arguments. Logical principles suggest that an argument form should instead aim to deny the consequent.
2. Denying the antecedent (the X variable or the explanatory phenomenon): In the same example as above if you locate or argue that a certain society's business education does not possess an economic bias, you might be inclined to argue that the society will have high environmental quality. But, again, there might be other causal factors at play that lead to low environmental quality and if we omit these we are at risk of making an incorrect thesis or theory. Logical principles suggest that an argument form should instead aim to affirm the antecedent (X) to propose the likelihood of the consequent (Y).

### 2.3 Arriving at Investigative Questions

A preferred theory presents several implications that can be observed in the real world of management and organizations. Such implications can be translated into a set of investigative questions, which can serve as a basis of a research design for an empirical study. For example, using the preferred theory about a nation's environmental quality, we can form propositions under conditions of economic development and material security. There are four possible combinations of these two conditions that we can demonstrate with a two by two matrix (see Figure 2).



**Figure 2:** Combinations of economic development and material security

De Vaus (2001: p7) gives an excellent example of translating a theory into its real world implications. I have replicated his ideas here. The resultant propositions for the above example of environmental quality are as follows:

1. Countries in situation C and D are equally likely to possess societies that promote environmental equality. That is, where there is high material security, societies from countries with high economic development are equally likely to care for their environment as those from countries with low economic development. Perhaps there exist materially secure communities in countries with low economic development because of their strong communal support mechanism. This will be an interesting perspective to test.
2. Countries in situation A and B are equally likely to possess societies who condone low environmental equality. That is, societies that do not possess material security despite high economic development will do just as badly in maintaining environmental quality as societies from countries with low economic development where material security remains low.
3. Countries in situation A will tend to have worse environmental quality than those in situation C. That is, those countries with low economic development that nevertheless enjoy low levels of material security will do worse than those with high levels of material security.
4. Countries in situation B will tend to have worse environmental quality than those in situation D. That is, those countries with high economic development that nevertheless enjoy low levels of material security will do worse than those with high levels of material security.
5. Countries in situation C will tend to do better in environmental quality than those in situation B. That is, those countries with low economic development that still possess predominantly materially secure societies will do better than those with high levels of economic development but still societies experience low material security.
6. Countries in situation D will tend to do better in environmental quality than those in situation A. That is, those countries with high economic development that possess predominantly materially secure societies will do better than those with low levels of economic development and societies with low material security.

In readiness for the research design, the above propositions can be rephrased as data gathering questions. This will ensure that the research design and methods are explicitly tied to solving the identified research problem.

## 2.4 Answering the Investigative Questions

To answer the investigative questions, it is necessary to design research. From a discourse theory perspective, here too, we need to look out for alternative explanations put forward by multiple discourse participants. In comparative or experimental research design language, this is the function of a control case or in regression language, the function of control variables: variables encompassing alternative explanations of the phenomenon of interest.

The first important question before seeking answers to investigative questions is: What is my unit of analysis? Then one can ask: Should I search for answers to the IQs using a single, small N or large N case approach? and What aspects of the IQs do I use to select case/s? As far as actual methods are concerned, one asks: Should I gather data using a questionnaire, a structured or loosely structured interview, actual observations, an analysis of existing documents, or unobtrusive methods? and then to produce the required answers: How will I analyze the data that I have gathered?

Often research design is conflated with research methods. De Vaus (2001) says:

*“Research design is different from the method by which data are collected. Many research methods texts confuse research designs with methods. It is not uncommon to see research design treated as a mode of data collection rather than as a logical structure of the inquiry. But there is nothing intrinsic about any research design that requires a particular method of data collection. Although cross-sectional surveys are frequently equated with questionnaires and case studies are often equated with participant observation, data for any design can be collected with any data collection method. How the data are collected is irrelevant to the logic of the design.”*

From De Vaus’s perspective alternative research designs include: experiments, case studies, longitudinal designs or cross sectional designs. And contrary to popular thinking about research methodology any of the following methods of data collection can be applied in any of the above research designs: questionnaires, interviews (structured or loosely structured), observations, analyses of documents and artefacts or unobtrusive methods.

Notably, all the above designs include a “case” in some form. You can select a single case to conduct a process type analysis, a multiple case to include both processes within cases and variations in variables between cases or a large number of cases as in a cross sectional or longitudinal type survey. You will need to highlight the number of cases necessary to address your research problem and how to select these cases. Making the rationale for doing this explicit, raises its value as scientific inquiry. For example, in a small N study, readers ask whether the cases are chosen in such a way that their similarities and differences illuminate the central question.

## 3. Discussion and Conclusion

I sought to develop a framework to help students think about and write their research proposals. The framework prompts the student to think about a practical management or organizational situation in terms of a series of questions and respond to these questions with thoughtful answers rooted in the student’s imagination, experience and, of course, in the academic research literature. This framework is based on answering three main questions: a broad research question, a more focused research question and a set of investigative questions. At its core is the focused research question which is simply a restatement of the students preferred thesis from a set of alternative answers to the broad research question. Using discourse theory, I argue that is important for the student to “listen” out for alternate answers before settling on a preferred thesis.

This question approach helps put the student into an inquiry mode as he/she traverses the various aspects of a research proposal. Each aspect of the research proposal—the real world situation in terms of management and organizations, the literature review, the research problem itself and the research design and methods—have been delineated into question prompts. Theoretically, this framework can be linked to discourse theory. A discourse theory of reasoning assumes that there are multiple agents and voices in any stretch of reasoning. For the research proposal this implies “listening” to the views presenting by multiple agents. Thus a good writer might imagine an audience of one or more agents (Graesser et al, 1996). For example, it is important to “listen” to the diverse answers in the literature and later amongst the research participants. In doing so one

rules out alternative explanations. Like most scientists, one is certain to reject ideas along the way to determine what one thinks is the best explanation (Sandoval & Reiser, 2004). One cannot be sure that one has the best explanation if one has not considered alternative explanations and written about why those explanations should be rejected in favor of ones preferred explanation. For example, at least two articulated explanations should be required of student literature reviews.

The framework put forward in this paper, has implications for teaching students about how to write the research proposal as well as supervising the proposal writing process. There is a rich literature on teaching and supervision involving concepts such as cognitive apprenticeship (Austin, 2009). Cognitive apprenticeship emphasizes the importance of the process in which a master of a skill teaches that skill to an apprentice. It involves several key steps: modeling, coaching, scaffolding, articulation and reflection, and promoting transfer of learning (Collins, Brown & Holum, 1991). Scholars have used this theory to explain how doctoral students might learn to think like scholars (Austin, 2009). Coaching doctoral apprentices about which questions are important for various aspects of the research proposal can be a useful way to convey the structure to them; it is also a useful way to trigger their search for answers and to stimulate thoughtful responses. The broad research question can be used as a scaffold to develop alternative theses that can lead to a more focused research question. The focused research question together with its underlying theory can be used as a scaffold to develop the investigative questions which form the foundation for the research design.

Students can benefit from a consistent approach to think about and develop a research proposal. Currently, students face a hotchpotch of ways to think about and write a research proposal. In countries such as South Africa, post graduate students often lack the resources to pursue full time research; many of these students are part-timers with relatively less time available to dedicate to their research projects. Additionally, South African universities offer little formal training in theory building and data analyses and the nature of part time studies is that a theory building workshop might not be well attended. Research proposal guidelines are provided by all universities but they simply convey the structure and content. What is required is a consistently worded and logically framed guide about, not just how to structure a research proposal, but how to think through the process of formulating a research proposal. This requires universities to convey some of the tools of critical thinking to post graduate students, especially since many of these students have not received formal training in critical thinking during their high school and undergraduate education.

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# The Challenge of Introducing the Subject of Research and Research Methods to Business Undergraduates

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**Abstract:** The research process is complex, involving many conceptually different steps. The identification of a suitable problem can be a challenge involving a high level of creativity, whereas applying a chosen research method must follow accepted and well defined rules. How researchers iterate between current discipline theory, subject knowledge and research methodology is usually opaque to the outside researcher. Students with no exposure to research find this puzzling because they are being encouraged to do something creative and original, and at the same time to adopt clearly defined language and a set of conventions associated with the chosen methodology. Business students in their 1st year face many new situations. Most of them have little experience of what research is about or the various elements that are necessary for a successful project. The teaching at school level mostly focuses on imparting subject knowledge and instilling basic numeracy and literary skills. It does not prepare them so well for setting their own goals and working independently - the core of research. Traditional teaching methods can help them acquire the relevant subject knowledge and basic research methods. But putting these together in a piece of practical research requires in depth understanding and creative thinking. Problem-based learning (PBL) is a way to help UG students at the beginning of their research attempts to develop the mindset and skills needed. This paper makes the case for introducing Critical Thinking skills to Business Management students in their 1st year, using a problem-based Learning (PBL) approach.

**Keywords:** Problem-based learning, teaching research methods, first year UG business students, business research process

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## 1. Introduction

The research process is complex, involving many conceptually different steps, all of which are unlikely to be familiar to business undergraduates. Management as a discipline is multi-faceted drawing on a number of related disciplines. These disciplines provide management researchers with a wide range of potential research methodologies. The research process demands both knowledge of these methods and the skills to apply them effectively. The extra-ordinary high rate of change in industries and the amazing turnover in firms ensures that subjects of interest to executives (and hence researchers) expand and change at just as fast a rate.

Most 1<sup>st</sup> year students come directly from school and are used to a well-structured learning environment. An environment, moreover, that sets the agenda of their learning, both decides and teaches the skills that they will need, poses the questions that they have to answer and then usually gives the answer or at least the methodology that will lead to the answer. The research process is not well structured and requires skills of a different nature such as setting their own learning goals, critical thinking and self-awareness.

This paper makes the case for introducing Critical Thinking skills to Business Management students in their 1<sup>st</sup> year, using a problem-based Learning (PBL) approach. It identifies the key skills needed for research in management (section 2) and establishes the new intake of undergraduates' relative lack of understanding of them (section 3). The paper then introduces PBL (section 4) and draws on the experience of teaching critical thinking skills in the first term of the first year of the business management undergraduate degree at Cass Business School (section 5).

## 2. The Business and Management Research Process

What constitutes the discipline of management is a contentious topic. As an activity now carried out by most of the population at some level we all have views on what it is and how best to do it. It is a practical discipline in that theories survive if they help the practising manager. Managers spend much of their time interacting with other people (Mintzberg, 1973) but must also be able to deal with the specific problems of their own industry. Managers deal with both the relatively 'hard' operational problems of their own company and the 'softer' ones relating to the people with whom they work. This provides a distinctive focus for the management researcher (Easterby-Smith et al, 1995; Easterby-Smith et al, 2018). This section describes what is

required for each of the main steps in the research process and presents the key characteristics of management research that researchers need to address.

Business Schools have been developing and teaching business and management theory for over a century, drawing on knowledge and ideas developed in a wide range of different but related disciplines such as statistics, economics, social science and psychology (Boddy, 2017; Easterby-Smith et al, 2018). Practitioners - business managers have been learning, applying and criticising much of the theory for almost as long a period.

Business organisations are continually innovating in product or service provision, culture and jobs, organisational structure and training. This provides a rich ever changing field for research, challenging existing theory, proposing new theory and above all researching actual practice. From the point of view of a management researcher, the focus on practical relevance of research results leads to an emphasis on empirical work. The changing business scene offers scope for original case material. But the central two factors of management – an organisation’s operations and the people working within it, dictates the importance of researchers making use of other disciplines ideas. This offers an ever expanding range of research methods developed by other disciplines that management researchers can use.

The research process is usually presented as a sequence of between seven and ten distinct stages all of which must be completed for any piece of research to be credible (see Table 1 for a typical list) (Saunders et al, 2015). It is easy to get lost in the welter of detail required to successfully carry out the individual steps. By taking each step separately, Business Research methods text books (Saunders et al, 2015; Bryman and Bell,2015; Easterby-Smith et al, 2018), lectures, classes and workshops tend to support this outcome. But it is not a linear process. Researchers will iterate between these steps, perhaps revisiting various stages many times, as their understanding of the research problem develops and changes as a result of the findings from other steps such as data analysis and writing up. As table 1 shows, choices are involved at every step, but these are not independent of each other. The final decisions must ensure that the work carried out at each stage forms part of an integrated whole, both supporting and consistent with work carried out at all other stages. It is by writing up the work as it progresses that the researcher develops a more profound understanding of the contribution of each step. This deepening understanding may be one of the triggers for a rethink of work carried out at other perhaps previous stages. The process of writing up is critical to the project (Saunders et al, 2015) - for the researcher in progressing the work and for the ultimate audience in explaining what has been done, why it has been done and what has been found out. Writing skills are tested at every stage of the research process.

**Table 1:** The steps in empirical research and what they involve.(based on authors experience, Saunders et al, 2015)

<b>step</b>	<b>Required Knowledge, understanding, skills and Mind-set</b>
Choice of Subject area of research and nature of problem area	Knowledge of subject deep enough to outline general nature of problem topic that interests you.
Extensive Literature review of subject area research and current accepted theories with close attention to recent published work	Up to date Knowledge of research in the subject area(s); Knowledge acquisition; mastery of detail; organisation and structuring of the literature to focus on the research question and support choices made at each subsequent step.
Development of Research Question (RQ)	Understanding of the problems posed by the subject area; Creative development of a doable and relevant RQ, outline of expected type of results aimed for
Choice of Philosophy of research; epistemology, ontology	Knowledge of range of options; choice of approach consistent with RQ, clarifying your personal worldview; implications for methodology to be applied
Research method chosen and reasons for choice	Up to date knowledge of range of research methodologies appropriate for business research; critical assessment of these methods, choice made consistent with RQ and results aimed for, reasons for choice
Overall Design of the research project – choice of data collection methods, analysis appropriate for chosen research method, reasons for choice	Mastery of the rules governing the application of the chosen research method; Mastery of Rules governing collection of the type of data being collected; critical assessment of reasons for choice of methods
Data Collection implementation	Knowledge of data collection potential problems; ways to manage problems and obtain good quality data
Choice of methods of Analysis of data; reasons and implementation	Mastery of appropriate methods of analysis; study of patterns revealed by the data; creative interpretation and comparison to similar work
Presentation of Results and interpretation	Insight and creativity in combining both results of data analysis and context of problem; critical assessment of the power of the analysis and results
Assessment of Contribution to knowledge	Subject area knowledge; critical assessment of work

step	Required Knowledge, understanding, skills and Mind-set
Assessment of Limitations and further research that looks promising	Critical assessment of work; creativity in outlining future possibilities

A number of characteristics of this type of work emerge from the analysis shown in the table:

- The researcher, may have extensive support from colleagues, supervisors and business executives, but the myriad choices required, establishes that each project is a unique piece of independent work ; each piece of research poses problems for which there is not necessarily a routine or obvious solution
- A significant part of the project requires innovation and creativity but this in turn rests on subject knowledge and the researcher’s skills in applying the well-defined rules governing the steps in the research process.
- All decisions require justification through critical assessment of alternatives and explanation of the basis for the choices made. This challenges the researcher’s ability for reflection and self-assessment.
- The need for clear thinking throughout the process so that the final report and presentations can show a coherent, logical structure that makes sense.

Hence, although knowledge of the range of research methodologies and the subject knowledge are of great importance, the personal skills of the researcher in applying these theories are just as important. These include the ability to work independently setting own goals, to think in a clear, logical and critical way and to communicate the results effectively.

### **3. The 1<sup>st</sup> year business students’ experience**

Students arrive at university with little knowledge of the subject of management or research methods. Neither do they have much experience of practicing the personal skills required for research. By the last year of their degree they will be expected to carry out their own individual piece of research. These students face major change in their first year. Their degree (business management) embraces a wide range of disciplines each with a different pedagogic approach and widely varying types of assignments. Their educational background prepares them well for knowledge acquisition, but not for dealing with the conflicting theories presented to them by their university teachers.

Because management is such a diffuse subject embracing a range of constituent disciplines, it does not logically follow from any subject taught before the age of 18, except arguably business studies. Hence students arrive having studied a very broad range of subjects during the last few years of their time at school. Some arrive with a high level of existing knowledge in, for example, statistics or economics whereas others have little or no knowledge of them. To participate effectively in the later stages of the degree students need to have a thorough grounding in these subjects as well as having effective study skills. So a significant component of the 1<sup>st</sup> year is devoted to imparting knowledge in a didactic manner. Moreover each sub-discipline in management is best suited to a different pedagogic approach. Both the pedagogic techniques and the expectations held by students of how they can be taught vary considerably across the content within a Business Management degree. From a student’s perspective the 1<sup>st</sup> year can come across as a set of disjointed set of subjects with no clear unifying theme and no common approach to delivery of the material.

The students’ level of preparedness to acquire knowledge in a complex and nuanced manner is frequently limited. Typically they have come from a school syllabus which focuses on clearly defined areas of knowledge and provides limited training in how to research matters for themselves. O’Donovan (2010) observed that a significant proportion of 1<sup>st</sup> year students saw knowledge purely in terms of a set of uncontested facts to be memorised, and noted behaviours and attitudes that mirrored this conception. She found that 1<sup>st</sup> year students frequently focused their efforts on memorising notes, recalling uncontested facts, and viewing the lecturer as an authority. Students at this stage were often puzzled by lecturers presenting them with multiple conflicting views of a situation. A further observation is that students often expressed negative views about particular activities within the 1<sup>st</sup> year, because these activities did not accord with their expectations of having knowledge transmitted to them.

The notion of threshold concepts (Land, 2016) refers to ideas and approaches which can be difficult for students to grasp, but which have the potential to move a student forward within a transformational process.

Land illustrates this by pointing out that a common cause of errors made by experts in many fields is that they apply knowledge which would have been appropriate to a previous set of circumstances. He extends this to the student experience by suggesting that students are often limited because they apply knowledge, and acquire knowledge, using techniques that were appropriate while they were still at school. This is part of the argument for students to be encouraged to persevere with 'troublesome' ideas which, while uncomfortable in some ways, can encourage students to think in a way more appropriate to degree-level study.

The degree offers many opportunities to learn but essentially how much is learnt depends on students' choices – in particular the level of effort invested. This is the type of decision that first year students have not been asked to make before. They will face a number of new types of assignments. For example many of them will have access to research databases and a high quality library for the first time and need to learn a set of tools to navigate the information that they gain from these. They will be expected to use these tools to find out for themselves the information required for an assignment rather than being told the sources to use (as would have been the case at school). It is this type of assignment which challenges students' existing perceptions and encourages them to move on from the idea that learning is only about knowledge acquisition.

Maunder et al (2013) discuss the transition to university and set out to understand the university experience in its entirety. While their analysis extends to students' perception of their status as university students, and their tendency to form social groups with one another, they also note students' need to participate in independent learning as something that distinguishes university from earlier stages of study. Furthermore they stress that the transition continues to have an impact beyond the first year of an undergraduate course.

As noted by Robinson et al (2013) there is an imperative to provide first year students with feedback which supports this transition.

In their analysis of the requirements placed upon higher education by a world of 'supercomplexity', Barnett and Hallam (1999) stress the need to emphasise learning processes more than student outcomes and also observe that, while academics frequently espouse the value of critical thinking, they do not always build effective practice that fosters critical thinking among students. Influenced by this reasoning, there is a strong argument for building critical thinking (Chatfield, 2018) and reflection into the 1<sup>st</sup> year of Business Management courses.

#### **4. Activity based teaching and Problem Based Learning (PBL)**

Skills are acquired through practice. It takes time and effort to first acquire and then develop a skill to a high level of expertise (Dreyfus and Dreyfus, 1988). Some skills (for example solving mathematics problems) are best learnt by practice on text book exercises worked in the classroom. First year students are experienced and generally proficient at these types of skills. The 'Soft skills' of dealing with other people cannot be learnt this way. For example, Linda Hill (1992) established that the most effective way of learning to be a manager was by the actual experience of doing the job. This somewhat hit or miss way of learning is costly and time consuming.

Hence educationalists have sought to accelerate the process by creating practical activities that give students the chance to practice the required skills, within an academic or training environment, combining this with the provision of various forms of appropriate feedback. More broadly, Goodyear and Dimitriadis (2013) argue for application of 'activity-centred design' which takes a student-oriented perspective. This reflects a long-term trend from transmissive pedagogies, which are focused on knowledge flowing in one direction from lecturers to students, to constructivist pedagogies within which students build on what they already know, and gather more through their own efforts and under the guidance of a lecturer. In a business school where a significant proportion of students have some relevant pre-existing knowledge and experience, the constructivist approach is particularly worthwhile.

Problem-based learning is one approach that has been widely applied in medicine and with some success in higher education institutions such as Maastricht University in the Netherlands (Schmidt, 2010; Vardi and Ciccarelli, 2008). This is the approach used for the new module described below. PBL is based on posing a complex ill-structured problem within a realistic context, (to establish the relevance of the problem) to students (Loyens, S. M. M et al, 2011). The key elements of this approach are the design of the activity, student group working and the tutor role. In essence small groups of students work on and discuss a complex case



problem relevant to their situation and subject learning aims of the course. Several additional skills are developed alongside the subject on which the case is based. These include collaboration, problem solving and self-driven learning. The success of PBL rests to a large extent on the design of the case problem. According to Loyens, S. M. M et al (2011) a case should build on prior knowledge (of the students), elicit discussion (by the student group), stimulate self-directed learning (through the implicit and explicit learning issues posed), encourage knowledge integration and transfer (with students pre-existing knowledge) and be relevant to the students' future profession.

PBL typically introduces practical challenges: it is much more straightforward to address a cohort of students who are all together in a lecture theatre than to divide them into teams, or to allocate them to tutorial groups, and to set, administer, and evaluate a series of practical activities. There are many concerns about PBL teaching, just because the outcomes depend so critically on the student cohort's contribution and hence behaviour. Vardi and Ciccarella (2008) show how labour and expertise intensive, designing and delivering a PBL course can be. With a large cohort this can only be delivered through the contribution of a team of educators working together.

There are a set of well understood tools for evaluating student response to such courses, but it can be difficult to evaluate the benefits of activity based learning. In the 1<sup>st</sup> year such activities can be set up to prepare students for later stages of their studies or for their future employment, and the true measure of success is either their eventual career trajectory or their ability to apply themselves to later stages of their course.

## **5. Practical example – Critical Skills module for Cass 1st year Business Management students**

This was a new module delivered in the first term of the new intake. It was taught for the first time to the first year students in the 2018-19 academic year to a cohort of 360 students drawn from over 40 countries world wide. The core design is based on the concepts of Problem- Based Learning (Loyen S.M.M et al, 2011). Students study eight modules during the academic year and this was the only module using problem-based learning methods. The stated educational aims are to develop critical thinking skills. Specifically the module aims to develop student's understanding of what is going on in any given situation through the use of reasoning, the evaluation of evidence and self-reflection on their own thinking processes.

### **5.1 The case problem**

The key concepts on which reasoning and critical thinking are based are presented in the course text book ('Critical Thinking' by Chatfield, 2018) with a wealth of fascinating examples. This forms the core knowledge for the module. Students are expected to read the whole of this book which is split into 2 parts. The first part deals with the basics of reasoning and logic. The second part entitled being reasonable in an unreasonable world introduces the concepts of rhetoric and bias. Chatfield gives a definition of critical reasoning highly relevant to research skills, 'when we are thinking critically, we are setting out actively to understand what is going on by using reasoning, evaluating evidence and thinking carefully about the process of thinking itself' (Chatfield, 2018, p6). Students are expected to read most of this book and develop their own reasoning skills through applying the ideas in the book chapter by chapter to the business case written for the module.

The case is based on Hailo, a taxi app launched in 2012 which then went through a several years long journey of highs and lows. The case closely mirrors what happened in the early years but adds a few wrinkles to the basic story to fit the needs of the course. Every week, the student group is confronted with a problem that Hailo also had to face. Each week's problem expands our knowledge of the company and its senior executives.

Short video clips showing the founders and senior executives describing actual developments, are placed on the VLE. The case problem meets the five criteria required for PBL (Loyens S.M.M et al, 2011). It is based on 4-5 years operation of a real commercial company hence is relevant to the students career aspirations. It builds on their prior interest in and general knowledge of the way markets and companies work and develops their knowledge further by detailing actual way that one company handled start up and early development years.

The questions set each week develop greater and greater understanding of the company generating ever greater interest and discussion over the term.

## **5.2 Weekly activities**

Each student is placed in a tutorial group of between 12 to 16 students. The ten sessions of the module are entirely run by the student group supported by a tutor. Student groups set their own learning goals and these differ each week. They are based on each week's Hailo case problem and the relevant chapter set from Chatfield's book (both of which they should have read prior to the session). The group is expected to identify Hailo's current problem, brainstorm possible solutions, determine what knowledge is lacking within the group and then decide learning goals together. During the following week, each member is responsible for addressing the learning goals, so as to come to the following week's session ready to share their learning and review and perhaps change the solutions proposed for the previous week's problem. Hence each tutorial session has two parts: the first part deals with the previous week's learning objectives. In the second part the group goes on to deal with the week's Hailo case problem and set the next set of learning objectives.

There are three student roles – leader, reporter and group member. Every student member is allocated the leader role for one session together with a partner and the reporter role for another session. The tutor's role will vary somewhat depending on the group's profile and needs. He or she will act as coach to each leader and reporter and will intervene as appropriate to ensure that the key knowledge given in the module textbook is addressed by the group. The team of tutors agreed to interject at least one common learning objective for each week based on the week's text book chapter.

Students must attend all sessions and are marked by their group tutor for attendance and participation over the 10 weeks sessions. Assessment also includes a mark for the handling of the leadership role and for an individual essay on a topic related to the Hailo case.

## **5.3 Resource requirements and tutor's role**

This type of teaching makes great demands on designers and tutors. Before the course commenced, the three faculty members leading the module, would have spent 60 – 80 hours in several preparatory meetings and tasks: developing original content with a real business, preparing the weekly problem tasks, the tutor guides, understanding the problem-based learning technique.

There were 9 Tutors each with between 2-3 groups of students. Problem-based learning was a new experience for all but one of the tutors. All attended a training session with a tutor from Maastricht University on problem-based learning. These hours spent together in designing, training, and briefing have been crucial in ensuring a consistent message and learning experience for the students across the tutor groups. Since the tutors carried out all the marking, kept the group sessions on target and provided oral feedback to the group members, it was important that they agreed a common marking scheme and approach to directing the weekly sessions. During the module, the tutors regularly met twice every week for informal debriefing session so as to share ideas and best practices across the tutor groups

## **5.4 Evaluation**

Evaluating the module and gathering feedback from both students and teaching staff has been a key part of the development process. For the critical thinking module a unique online evaluation process was built which focused on the benefits or otherwise of learning in small groups. Feedback received from students regarding the group activities was generally supportive, with a high proportion of students responding 'mostly agree' to statements such as 'working in a tutorial group setting has helped me to understand better the subject matter of the course'. There was also an opportunity for students to post discursive comments. These conveyed a more varied picture. Many were extremely positive and commented favourably on the level of engagement, the extent to which it had facilitated their own thought processes, and the support that they received from tutors. But a significant minority felt that the approach worked less well for them than conventional lectures, including one comment from a student, clearly unaware of the background to the approach, confidently predicting that problem-based learning would never attain widespread use, and another proudly suggesting that they were already familiar with all the critical thinking skills covered in the material. Others quite reasonably expressed concern that a format which depends on significant participation and input from students does not work effectively for those who are very introverted or who have other difficulties in communication.

This feedback afforded the opportunity to carry out a significant redesign in preparation for its delivery for the second time. Issues which were addressed included:

- The practical and logistic challenges associated with dealing with a large cohort working as a multiplicity of small groups.
- The pedagogic approach and its fit with other modules and with students' expectations. For example some students were uncomfortable with an approach which was focused on thinking and reasoning techniques and not on internalising a body of knowledge.

Key characteristics of the redesigned module to be delivered in the next academic year (2019-20) include a slight increase in the amount of lecture content to allow the key concepts to be framed more clearly and presented to students in the context which emphasises why they are important. The assessment process has been revised to reduce the opportunities for academic misconduct as the original approach was, at least in principle, open to 'contract cheating' where students pay for essays to be written to order. Nevertheless the inclusion of an assessment of participation as a central part of the module is being retained.

## **6. Conclusions**

The module clearly focuses on developing both critical thinking and some of the personal skills which are important for empirical business management research. These are skills that, if internalised by first year students, will help them with the transition to university as well as in subsequent years of their undergraduate studies and in their future careers. The problem-based learning structure poses challenges for both teaching staff and students. The success of this type of course depends on a number of factors, of which efficient organisation, student presence at and active participation in class and a common agreed approach to class interventions by tutors are perhaps the most important. Individual student 'buy in' is critical to the learning of the student group as a whole. The mixed response of students to the module highlights the importance of 'selling' the module more effectively to them. The delivery of this module in the next academic year stands to benefit greatly from this first experience of teaching using problem-based learning methods.

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# Incremental Development of Business Process Architecture using the Design Science Research Methodology

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**Abstract:** This paper presents a new approach to developing a business process architecture using the design science research methodology. It is also part of the research framework development that generates a business process architecture using semantic knowledge management enablers. The design science research methodology has been adopted to guide the research phases which mainly include problem identification, objectives definition, design and development, demonstration, evaluation and communication. The research framework components are incrementally developed and evaluated according to the design science research methodology phases and its iterative restriction. Sufficient and representative case studies of a bank in Jordan have been applied in order to demonstrate and evaluate the research framework. The bank has been divided into three case studies that reflect the main sectors of business in the bank. Each case has been utilised as an iteration in the design science research methodology. The first iteration applied the treasury case, the second the deposits case and the third the credit case. Following the first and second iterations, feedback was reported and a new iteration conducted. Feedback has been provided according to the evaluation phase of the design science research methodology iterations. The evaluation phase has included tests of verification and validation in the first, second and third iterations of the design science research methodology. These tests are followed by checking dynamism and the mixed methods approach evaluation in the second and third iterations. The mixed methods approach has been used to assess the advantages of the semantic knowledge-based business process architecture and its impact on sources of sustainable competitive advantage; these being core competencies, technical capabilities and social capital. The second and third iterations have shown a successful verification and validation of the research framework and the objectives of dynamism and sustainable competitive advantage have been achieved. The design science research methodology has facilitated the success of the development and evaluation of the research framework and has handled the disadvantages that the bank cases have revealed through the implementation of its iterations.

**Keywords:** design science research methodology, business process architecture, knowledge management enablers, banking, ontologies

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## 1. Introduction

The design science concept was formulated by Simon (1996), who explained the role of science disciplines in making and designing artefacts with particular settings. Design science research is “a research paradigm in which a designer answers questions relevant to human problems via the creation of innovative artefacts, thereby contributing new knowledge to the body of science evidence” (Hevner and Chatterjee, 2010, p. 5).

The design science research methodology (DSRM) was introduced to apply design science research in information systems (Peppers et al, 2007). DSRM combines different procedures, principles and practices to address three objectives (Peppers et al, 2007) which include (i) ensuring consistency with previous literature, (ii) providing a nominal process model for doing design science research, and (iii) producing a mental model for presenting and evaluating design science research in information systems. Peppers et al, (2007) have introduced six stages of the DSRM consisting of problem identification and modification, objectives for solution, design and development, demonstration, evaluation and finally communication.

In this paper, we describe the development of an ontology-based framework, i.e., the KMEOntoBPA, that uses the DSRM in to order to develop a BPA for a bank. The KMEOntoBPA framework aligns the abstract knowledge management enablers’ ontology (aKMEOnt) (Sabri et al, 2017) with the semantic Riva BPA (srBPA) ontology (Yousef and Odeh, 2014) in order to generate a knowledge-based BPA. Each iteration of the DSRM addresses an essential part of the bank’s operations and represents one case study. The knowledge-based BPA of each case study is generated after being used in the demonstration of the KMEOntoBPA framework. Furthermore, the BPA of these case studies is also developed using the Riva BPA method (Ould, 2005) without knowledge management enablers (KMEs). These BPAs (without KMEs) have been used as a benchmark to validate the new knowledge-based BPA in each case.

The rest of this paper is organised as follows: Section 2 presents an overview of research methodologies. Section 3 discusses the use of a representative and sufficient case study. Section 4 explains the research methodology and introduces the three case studies. Section 5 includes feedback and further discussion about the evaluation of each case study of the DSRM iteration. Section 6 concludes the paper.

## **2. Overview of research methodologies**

Collis and Hussey (2014) classify research methods according to the following: its purpose maybe descriptive, exploratory or predictive; its process is either qualitative or quantitative; its outcome is applied or basic; and its logic deductive or inductive. These different approaches are associated with two research paradigms that guide research: the positivist and interpretivist paradigms (Collis and Hussey, 2014).

Positivist research is based on the existing relations within phenomena that are described using a structured instrument (Orlikowski and Baroudi, 1991). Positivist research is objective and neglects passions, ideologies and values (Ryan, 2006). Quantitative methods and the deductive process are mainly used in positivist research. Interpretive research is involved with the social context of the phenomena that the research attempts to understand and acquire knowledge from (Rowlands, 2005).

In interpretive research, participants' subjective meanings are considered while interacting with the environment (Orlikowski and Baroudi, 1991). Qualitative methods and the inductive process are mainly used in interpretive research.

Another significant approach that can be integrated with different research methods is the design science research in the information system (IS) field (Venable, 2006). Design science seeks to understand and solve a problem by presenting and applying a designed artefact that extends human boundaries and enterprise capabilities (Hevner et al, 2004).

In this research, the design science approach is adopted for the following reasons:

- The artefact of this research is an ontology-driven information system and the design science approach is recommended in information system research (Hevner et al, 2004).
- This research requires developing a socio-technical artefact using ontologies in order to support a dynamic BPA with a sustainable competitive advantage. A design with a socio-technical artefact is an approach that involves individuals/users, organisational and technical factors (Baxter and Sommerville, 2011). Positivist and interpretivist paradigms are socially enabled, but they are not as socio-technologically enabled as the design science approach (Vaishnavi and Kuechler, 2004).
- The incremental development of the research artefact using various case studies corresponds to the iterative restriction in design science research which is an essential part of progress through phases.
- The evaluation of the research artefact is concerned with different evaluation approaches. One is related to the structural level or the technical aspect of the ontology and the other is concerned with its impact on the organisational level. The positivist and interpretivist paradigms are more interested in the impact of technology on an organisational level because "these paradigms do not attend to the creation of unique knowledge associated with the development of information systems from their conception to inception" (Gregg et al, 2001, p. 172). On the other hand, the multiple evaluations, i.e., the technical and organisational, are both valid for design science research (Venable et al, 2016). Consequently, using different criteria or measurements to evaluate the effectiveness of the research artefact on structural and organisational levels can be completed.

## **3. A representative and sufficient case study**

The research uses a bank as a case study. The business of banking can be divided into three essential divisions: the deposits, the credit and the treasury. These three divisions are proposed to represent the overall BPA of the bank. In this research each division is considered as one case study in order to achieve multiple-case designs. Multiple-case designs are preferable to single-case designs even if they are two or more cases in a single case study since the opportunities of identifying a useful case are higher and the "analytic benefits from having two or more cases may be substantial" (Yin, 2014, p.64). Evidence is also provided from different resources and generalising the study will be easier. Furthermore, building the BPA as a case study for each division makes it clearer, more agile, and also corresponds to the iteration process in the DSRM which refines and reviews the design of the research framework, the KMEOntoBPA.

The demonstration and evaluation of the research framework requires the use of sufficient and representative case studies. Runeson et al, (2012) claim that context and size are not sufficient to characterise a representative case study. They also agreed with Yin (2003) and indicated that what Yin had proposed were characteristics of exemplary/representative case studies required in order to improve case study standards.

These main characteristics will be captured and reflected on in the research case studies as follows:

1. The study is of a significant topic: The significance of topic can be determined through existing literature on the topic or consulting the stakeholders and participants in the potential case study. This research involved reviewing literature and attending meetings with the board of a bank and the related managers of the three case studies: the treasury, deposits and credit. These meetings revealed the importance of the topic for the bank regarding the following: (a) implementing a knowledge management system that has an impact on the bank processes of the main sectors, i.e., the treasury, credit and deposits; (b) automating knowledge resources for each essential part of the bank in relation to its processes. These requirements of the bank correspond with the topic and show its significance for research.
2. The study must be complete in regard to the following :
  - The boundary of the case is made explicit. The case study boundary involves “its physical confines, its activities and the time span of the study” (Cousin, 2005, p.423). The physical boundary of the treasury case study is the treasury department in the headquarters’ building. The deposits case study boundary is one of the bank branches. The credit case study boundaries are the credit department in the headquarters’ building. Activities are mainly the processes of these boundaries. The time span of the study is related to the completion of this research.
  - There is a comprehensive collection of appropriate evidence. The complete case study should demonstrate convincingly that the researcher made an exhaustive effort to collect all relevant evidence. Different approaches have been used to seek information from different resources in order to achieve a comprehensive collection of evidence. Interviews with managers in each case study, hand-delivered questionnaires and the checking of the necessary documents inside the bank are all different ways of collecting the agreed upon evidence.
  - There are no significant constraints on the conduct of the study. The topic of the case studies is not concerned with significant constraints that might affect the conduction of each study such as confidential information or financial statistics. The topic of the research is mainly related to the bank environment and its processes.
3. The study must present sufficient evidence when reporting the results and disseminating the artefacts of the case study. Presenting sufficient evidence is related to the ways of conducting investigations, handling and interpreting collected evidence (Yin, 2014). This research has clearly presented the methodology and the steps that have been performed in order to demonstrate and evaluate the research framework using the bank case studies. It has also reported the results and artefacts of each case study after defining the evaluation approaches and the statistical analyses that were used.
4. The case study must respect the ethical, professional, and legal standards relevant to that study. These standards are mainly related to the policies and procedures of the bank. The case study has considered and respected these standards and was committed to them while conducting the research.

#### **4. The research methodology**

The DSRM has been used to guide the alignment of different parts of the research in order to develop its framework. It has also paved the way to reach the research aim and objectives. Figure 1 summarises the stages of the adopted and adapted DSRM process in undertaking this research.

##### **4.1 Problem identification and motivation**

The first phase in this research identifies the problem and its justification in order to continue seeking the solution. The literature is conducted in this phase in order to identify the research gap analysis, and hence formulate the research aim and objectives.

The output of this stage provides a detailed understanding of two different disciplines: knowledge management enablers and business process architecture. It also reveals the problem that needs to be investigated in the BPA area. KMEs are the main field of discussion in the KM literature and are considered the

upper layer and driver of the research framework. The KMEs are introduced to handle the research problem and contribute to the building of the main research framework.

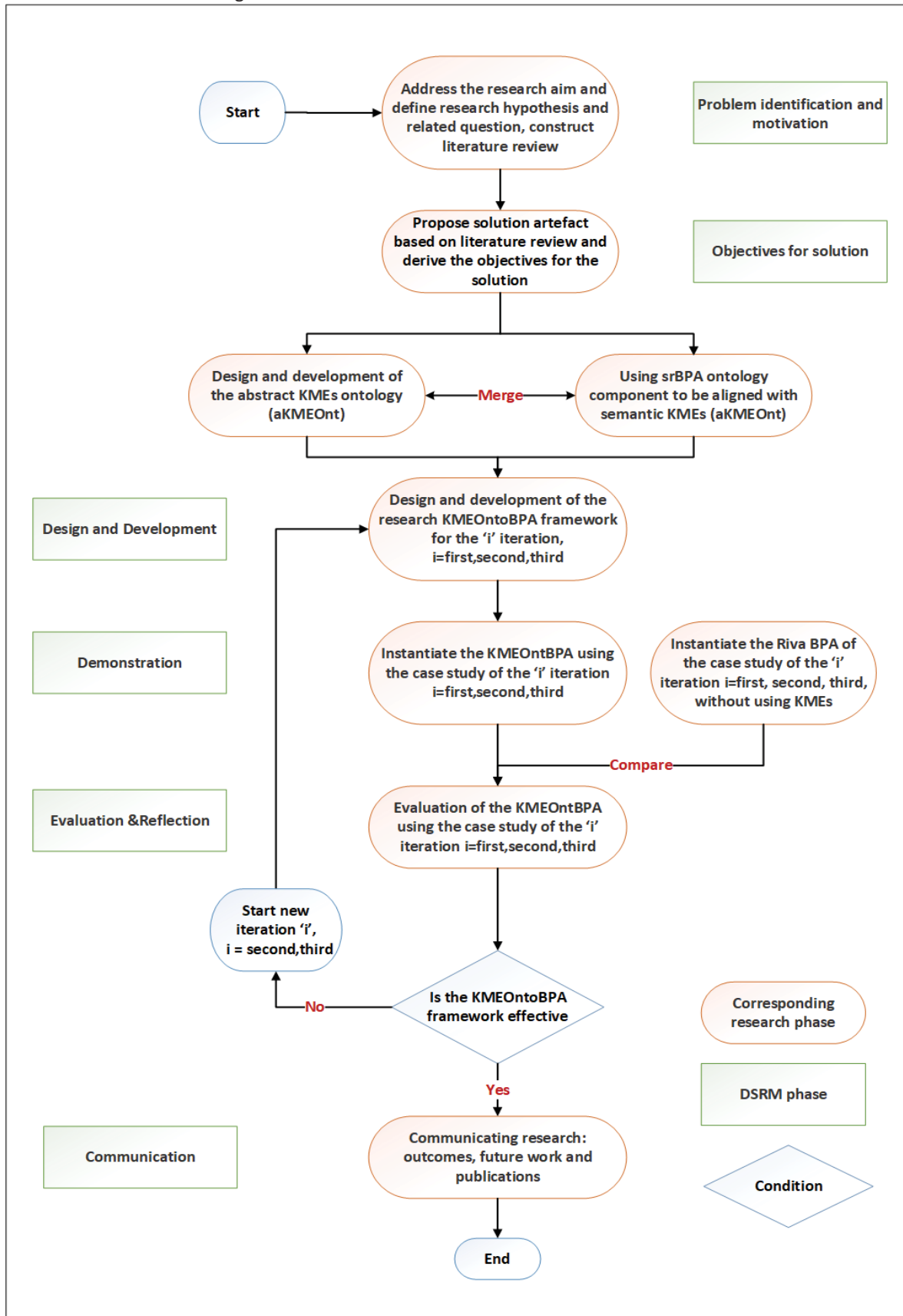


Figure 1: Research methodology adopting the DSRM process

#### **4.2 Define objectives for the solution**

The objective for the solution in the second phase of the DSRM process model is derived from the problem identification in the first stage. By identifying the research gap, stating the research problem and defining the aim and objectives of this research, the qualitative objective is presented as a solution to the problem that has not been addressed before. Building an effective knowledge-based BPA is new and research has only been directed towards the integration of KM and the business process management including planning, analysis, implementation and utilisation (Schmid and Kern, 2014)

#### **4.3 The case of treasury – The first iteration**

The DSRM iteration comprises the phases of design and development, demonstration and evaluation. Adopting these phases is related to the application of the research framework, i.e., the KMEOntoBPA. The KMEOntoBPA framework is composed of two main components: the aKMEOnt and the srBPA ontologies.

Applying the design and development phase requires constructing the aKMEOnt and creating its semantic mapping with the srBPA ontology. The srBPA ontology is already defined in the previous research work of Yousef and Odeh (2014). The aKMEOnt represents a formal description of the KMEs domain with its relationships (Sabri et al, 2017). The aKMEOnt component is the driver that has led the development of the srBPA component.

Following the design and development phase, the KMEOntoBPA framework was demonstrated using the first case study which is the treasury department of the bank. Using a case study is related to the type of this research and its associated questions. This research is problem-based research which requires an empirical investigation in order to explain the relationship between knowledge management and the BPA within real settings. It also requires evidence to support that explanation. The case study approach can meet these requirements and evaluate in depth the research framework in the business environment (Hevner et al, 2004).

The demonstration phase involves instantiating the KMEOntoBPA components which are the aKMEOnt and srBPA ontologies, using the treasury case study.

The evaluation phase in this research is related to the assessment of the KMEOntoBPA framework. Two perspectives on evaluation are distinguished in the evaluation of the information system and in the DSRM: the ex-ante and ex-post perspectives (Pries-Heje et al, 2008). Ex-ante evaluation is performed before the research artefact construction and ex-post evaluation takes place after the research artefact construction. This phase of this research is considered as ex-post evaluation since the artefact has been constructed. The ex-post approach offers an opportunity to demonstrate the research framework in a real environment using naturalistic evaluation methods (Pries-Heje et al, 2008). A naturalistic method can involve experiments, field and case studies (as in this research), ethnography, or action research (Venable et al, 2016). It performs evaluation in real settings with real humans facing real problems (Sun and Kantor, 2006).

The evaluation of the KMEOntoBPA in this iteration is performed using the same case study of demonstration, i.e., the treasury department. The case study is applied by the research KMEOntoBPA framework in order to measure its effectiveness. According to Juristo and Morant (1998), an evaluation can include the following: checking the correctness of the system structure which is referred to as verification, checking the validity of the system content which is referred to as validation and checking the objective achievement of the system.

Applying these evaluation types to the KMEOntoBPA framework, using the case study of the DSRM iteration, will imply verification of the aKMEOnt, validation of the benchmark Riva BPA without KMEs, validation of the KMEOntoBPA semantic approach and finally, the achievement of the objective by developing an effective KMEOntoBPA approach that generates a dynamic BPA on a structural level, and consequently, assessing its support for a sustainable competitive advantage (SCA) in the bank. The first case study has only included verification and validation of the KMEOntoBPA in order to inform its initial appropriateness with the collaboration of the domain experts in the treasury case study that is employed in this iteration. Thus, it can be determined whether the framework is appropriate with regard to evaluating its achievement of the objectives.

Table 1 shows the research evaluation framework, which represents the evaluation type of each DSRM iteration.



According to verification and validation, feedback has been introduced in order to determine the necessity for modifications and iterating back to the design and development phase of the DSRM second iteration before demonstration. The feature that should be verified in the aKMEOnt is correctness. Correctness implies that “there are no surplus or missing items in the model” and is divided into three major criteria: “redundancy, incompleteness and inconsistency” (Juristo and Morant, 1998, p. 153). Validation of the KMEOntoBPA requires applying Riva rules to check the validity of the output elements of the BPA that instantiate the srBPA ontology component. It will also need to develop the Riva BPA without using the KMEs as a benchmark and check its validity in order to compare it with the knowledge-based BPA.

**Table 1:** The research evaluation framework

DSRM Iterations	KMEOntoBPA Evaluation Components	Evaluation Type for Each Iteration		
		Verification	Validation	Dynamism & Sustainable Competitive Advantage
First Iteration (Treasury)	The abstract KMEs ontology (aKMEOnt)	Walk through or inspection method to evaluate the correctness of the aKMEOnt in terms of satisfaction in representing the case using study KMEs.	-	-
Second Iteration (Deposits)				
Third Iteration (Credit)				
First Iteration (Treasury)	The Riva BPA of the case study without using KMEs	-	Validating the Riva BPA of the bank selected case study with domain experts	-
Second Iteration (Deposits)				
Third Iteration (Credit)				
First Iteration (Treasury)	The KMEOntBPA framework	-	1) Validating the knowledge-based Riva BPA elements with domain experts 2) Comparing knowledge-based BPA with the Riva BPA without KMEs using the bank case study.	-
Second Iteration (Deposits)				1) Inspection of automatic derivation of candidate essential business entities for BPA development and the potential of agile configuration of BPA elements 2) Using mixed methods approach to assess the KMEOntoBPA framework advantages and its impact on sources of sustainable competitive advantage (core competencies, technical capabilities and social capital) in the second and third iterations
Third Iteration (Credit)				

#### 4.4 The case of deposits – The second iteration

The feedback of the DSRM first iteration has determined whether to iterate back to the design and development or demonstration phase and to perform a new iteration. Iterating back to the design and development phase implies implementing some modifications to the design of the KMEOntoBPA framework.

Modifications to the KMEOntoBPA framework were followed by its demonstration and evaluation using the second case study, i.e., the deposits department of one of the bank branches. The evaluation has included the

same verification and validation that were defined in the DSRM first iteration with a different case study and the checking of the objective achievement of the KMEOntoBPA. A dynamic BPA with a sustainable competitive advantage is the objective of the KMEOntoBPA. These features have specifically required the following actions: (1) an inspection of the automation of the candidate essential business entities (CEBEs) for developing the BPA and the potential of agile generation and configuration of the BPA elements (2) a mixed methods approach evaluation of the advantages of the KMEOntoBPA and its support for sources of sustainable competitive advantage (SCA). Sources of SCA are core competencies, technical capabilities and social capital. Feedback has been provided in order to start a new DSRM iteration.

The mixed methods approach has included quantitative and qualitative approaches. The quantitative approach used survey questionnaires that were hand-delivered to the seniors of the bank branch. The qualitative approach has included an interview with the branch manager.

#### **4.5 The case of credit – The third iteration**

The DSRM third iteration corresponds to previous iterations. Feedback of the second iteration has led to a new iteration and a demonstration of the KMEOntoBPA. The KMEOntoBPA framework has been demonstrated and evaluated using the third case study, i.e., the credit department. The evaluation of the KMEOntoBPA has included the same evaluation types of the second iteration. By the end of this evaluation, iterations have been completed and the research can be communicated in the final phase of the DSRM.

A mixed methods approach evaluation has been performed similar to the second iteration. A quantitative approach used survey questionnaires that were hand-delivered to the seniors of the credit department of the bank headquarters. A qualitative approach has included two interviews with the credit and trade finance managers.

#### **4.6 Communication**

The communication phase is essential in providing a sufficient description about the solution artefact to the relevant audience (Hevner et al, 2004). Moreover, it improves the solution by providing valuable feedback and new suggestions. Research communication is mainly accomplished through publications and with bank experts.

### **5. Feedback and discussion**

The feedback of the first iteration is dependent on both the verification and validation of the KMEOntoBPA. The validation of the KMEOntoBPA has shown that shortcomings are still found after comparing the output knowledge-based BPA of the KMEOntoBPA to the Riva BPA without KMEs. These shortcomings involve missing representing services in the treasury department, which makes the BPA elements less representative of the real business of the treasury. In addition, it impacts the response to the changes and learning capabilities of the BPA. Therefore, it was recommended to iterate back to the design and development phase and consider services representation in the KMEOntoBPA framework. This new iteration should solve this disadvantage and support an agile generation and reconfiguration of the BPA elements. It also completes the development of the overall BPA using the semantic KMEs.

The evaluation of the second iteration has shown positive feedback regarding verification and validation, which were tested using the deposits department. The validation has shown that the output knowledge-based BPA is complete compared to the Riva BPA without KMEs. The objective achievement of the KMEOntoBPA was evaluated by dynamism and sustainable competitive advantage, which were also checked through the deposits department. The KMEOntoBPA has shown dynamism by automating the generation of the candidate essential business elements of the BPA using different algorithms. Algorithms can also be used in order to explore and re-define the elements of the BPA. The evaluation of the KMEOntoBPA has also revealed agreement on several advantages and support to SCA (or sources of sustainable competitive advantage). However, there was no significant positive relationship between the KMEOntoBPA advantages and the KMEOntoBPA impact on sources of SCA. No relationship can be justified with the sample size of the deposits department of the bank.

Thus, a new iteration can be conducted starting from the demonstration phase of the DSRM. This iteration has completed the overall BPA of the bank with and without using the KMEOntoBPA and provided the research with more consistent results regarding the design and development of the KMEOntoBPA, in addition to a larger department and participants.

The feedback of the third iteration has indicated successful verification and validation of the KMEOntoBPA. The objective of dynamism and sustainable competitive advantage has been achieved using the credit department. The dynamism is evaluated through the use of algorithms and the agility to adopt and generate new BPA elements. Competitive advantage is evaluated using a mixed methods approach which has revealed agreement on several advantages of the KMEOntoBPA and its support to sources of SCA. Thus, this iteration has finalised the iterations of this research and will lead to conclusions.

## **6. Conclusion**

In this paper the development of the research framework (the KMEOntoBPA) has been described using the DSRM. Two main benefits of using the DSRM can be summarised as follows:

- The DSRM can provide an incremental development and inspection of the research framework by using iterations with different case studies which can represent the overall BPA.
- The DSRM simplifies and supports an understanding of the knowledge-based BPA development by dividing the main case study into multiple-case designs, where each case is developed by an iteration and all together represent the overall BPA of the main case study.

In conclusion, the DSRM has facilitated the development of semantic knowledge-based systems in order to generate business processes. Therefore, it is recommended that this methodology be applied in the development of different information systems that are implemented to extract business processes using other process modelling approaches.

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# Academic Dishonesty: A Preliminary Researchers View

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**Abstract:** Increasingly academe is facing the challenge of dealing with allegations of plagiarism and academic dishonesty. Academic dishonesty plagues both the degree acquisition process as well as the publishing process. Academic dishonesty within the university space has been clouded in mystery, as many universities are not willing to break the code of silence. However, within the academic publishing space, several respectable journals had to withdraw published papers citing academic dishonesty as a concern. At the core of academic dishonesty is the researcher and their perceptions of issues affecting academic dishonesty. The purpose of this research is to develop a better understanding of researchers' attitudes to issues of academic dishonesty. This study is quantitative in nature and primary data in the form of Likert scale questions were collected from developing researchers. The questionnaire data were statistically analysed, and a framework was developed to outline emerging researchers' perceptions of academic dishonesty. Key findings included academic dishonesty is influenced by several issues such as academic pressure, electronic deterrents, writing challenges, outsourcing, data challenges, plagiarism, database challenges, and electronic sources. This is important because by better understanding researchers' perceptions to academic dishonesty, (1) appropriate training interventions can be implemented (2) higher quality research will be produced and (3) research funding will not be wasted.

**Keywords:** Perceptions of Plagiarism, cheating, Academic Integrity, Ghost Writing, Academic Ethics, Academic dishonesty

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## 1. Introduction

Academic dishonesty in the form of plagiarism, ghost-writing, or data fabrication has an indelible impact on the images of a university. For example, Duke University recently agreed to pay back the US government \$112.5 million to settle claims that the universities researchers used fabricated data to attract several government grants (Casadevall, 2019). It is not uncommon to find sensationalist media coverage of academic dishonesty (see Exhibit A). Merely by being associated with a university that has been involved with academic dishonesty, all the academic staff appears to be guilty by association (Molet et al., 2013). Casadevall (2019) aptly points out "this is a communal punishment for an institution where the overwhelming majority of scientists are honest, hard-working individuals seeking knowledge for the good of humanity." With the increasing acceptance of digital scholarship (Remenyi and Susan, 2016), universities that are involved with or appear to be involved with less than acceptable practice are named and shamed. The internet is unforgiving, as these naming and shaming events stay on the internet for perpetuity leaving a digital scare against the good name of the university.

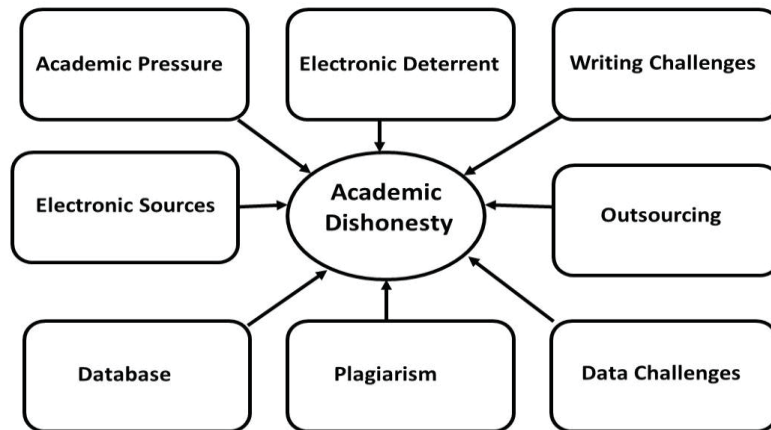
## 2. Background

Academic research is the process of adding something of value to the existing body of theoretical and practical knowledge in response to a question or series of questions. Academic research follows a formal process which includes the establishment of an auditable research methodology to answer the research questions (Remenyi, 2017). The methodological approach adopted by a researcher is sometimes prone to abuse, some researchers have used flawed research methods (W5, 2011; W4, 2018) or sophisticated data dredging techniques (Head et al., 2015) to make their research appear more relevant. In the pursuit of presenting relevance's, the research has become dishonest.

An important characteristic of academic research is that the research needs to be presented in a matter that demonstrates a respectable level of scholarship on the part of the researcher(s) (Remenyi, 2017). Scholarship is displayed in two forms. These are academic writing and by the appropriate use of research methodology, both of which are not trivial tasks. The scholarship enterprise can fall victim to academic dishonesty. Academic dishonesty can broadly be described as a form of cheating that occurs within the academic space. Academic dishonesty could include (but not limited to): fabrication, deception, sabotage, bribery, collusion, improper use of information, communication and technology and plagiarism (W1, 2019; W2, 2019). As a subset of academic dishonesty, plagiarism refers to the use of other people's ideas and words without giving the original author appropriate acknowledgment (Randall, 2001; Clarke, 2006). If ideas are used in an essay or dissertation that

have been found in the published work of another author(s), it is academic dishonesty not to specifically acknowledge the original source(s). It is important that the acknowledgment must follow the rules of the referencing system employed in the work (Singh and Remenyi, 2016). Interestingly some point out that there is the issue of unintentional plagiarism when the researcher disregards accepted scholarly procedures (W3, 2019). Although the use of ideas without acknowledging them is an offense, it is even worse if the actual words of other authors are copied without acknowledgment (Singh and Remenyi, 2016). There are several grey areas that constitute academic dishonesty but are not adequately understood.

Academic dishonesty is influenced by several factors, see Figure 1, some of these factors are: academic pressure, electronic deterrents, writing challenges, outsourcing, data challenges, plagiarism, database challenges, and electronic sources. Each of these factors will be briefly discussed.



**Figure 1:** Factors Affecting Academic Dishonesty

There are gaps in the literature about how researchers feel about plagiarism (Lei and Hu, 2014; Mouton, 2017). There is a disproportionate number of pages published about students’ perceptions to and involvement with academic dishonesty. It is understandable that universities and academics approach the issue of academic dishonesty within their ranks cautiously.

There is increasing academic pressures on individuals to “publish or perish”(Dinis-Oliveira and Magalhães, 2016; Grimes, Bauch and Ioannidis, 2018). Academics who are under-resourced find themselves under pressure to effectively manage tuition, research, academic citizenship and community engagement (Cawood et al., 2008; Santoso and Cahaya, 2018). Due to limited funding from governments and abused subsidy models, academics are treated as units of production in order to claim government subsidies (Hedding., 2019). These ongoing sources of pressure have an impact on the quality of research that universities produce. There has been an argument that electronic deterrents can be used as a tool to reduce academic dishonesty.

Publishers (Supak Smolcic and Simundic, 2013; Kalnins, Halm and Castillo, 2015) and academics are using electronic deterrents to curb academic dishonesty. In a recent conversation with a senior professor, the professor erroneously claimed that “...we have solved the plagiarism problems, we use Turn-it-in”. Software deterrents to plagiarism are one tool in the academics arsenal, however, it must be noted that tools like Turn-it-in and iThenticate “does not detect plagiarism, but it does highlight matches in text between the article that has been uploaded” (Lammey, 2014) to articles within the data repository. Software can be used to reduce gross plagiarism (Santoso and Cahaya, 2018). However, any reasonable attempt to reduce academic dishonesty would require a joint initiative between academic publishers, editors (Jarić, 2016) and researchers.

Researchers who are the custodians of the knowledge-generation process may at times in their research career have challenges when it comes to writing.

It has been said that ‘writing is a full body contact sport’ and within the research writing space there is inadequate attention paid to formal training for writing (Aitchison, 2015). For example, research writing retreats require a high initial investment and many universities are shackled by limited resources, which results in academics taking longer to develop the required academic writing competence (Kornhaber et al., 2016). A

further concern is that international journals are predominantly in English, posing a barrier for second language English research writers (Jeyaraj, 2018). In a desperate effort to bridge some of the writing challenges, some researchers have attempted to outsource aspects of their writing.

Some authors have resorted to outsourcing their writing by using ghost-writers to assist with the writing of their research (Singh and Remenyi, 2016; Sarwar and Idris, 2018). Ghost-writing is the practice of hiring a writer (or writers) to produce a piece of work that follows a predefined style, and none of the original writing credit is attributed to the ghost-writer/s. Detecting ghost-writing is difficult because the peer reviewer is not acquainted with the authors writing style (Singh and Remenyi, 2016).

A further challenge for researchers relates to data. There are two issues under data, one is data overload and the other is false information. Data overload comes in the form of scientific and pseudo-scientific academic articles being published, and it is argued by some researchers that only a small fraction of these papers represents a contribution to the scientific body of knowledge. False information is represented by predatory and counterfeit journals (Singh, 2017). Researchers need to navigate the different data repositories to find respectable scientific papers.

Plagiarism and its consequences are becoming increasingly complex (Robinson-Zañartu et al., 2005) and difficult to identify. There are gaps in the literature regarding the factors that force some researchers to commit acts of plagiarism, partly due to the disproportionate level of research focusing on student perceptions of plagiarism (Husain, Al-Shaibani and Mahfoodh, 2017) rather than researcher perceptions. It may be argued that researchers understand the consequences of plagiarism and therefore there is no need for research in this area or a plagiarist has no reason the further expose their universities and/or themselves.

Like any type of technology, academic databases are constantly changing. To adequately search the different databases, researchers are required to understand the interfaces of different academic databases. Understanding the different databases is not an easy task as each database has a distinct vocabulary and interface (Singh, 2017). The complexity of the database interface affects the literature review journey.

Increasingly the extent literature has become electronic. The search for literature takes the researcher through two paths, the traditional academic publishing path and the open access academic publishing path. Within these spaces, it is estimated that there over 50 million published academic articles (Jinha, 2010) and this number is growing. These articles are housed in special databases. UlrichsWeb is a library directory that provides information on active academic journals, and there appear to be 1296 databases and 971 online databases. The Gale Directory of Databases claims to cover more than 20000 databases. This large amount of data poses a challenge to the researchers (Singh, 2017) and emerging researchers who can be easily overwhelmed by the vastness of the literature.

### **3. Methodology**

When undertaking any research, it is prudent to have an acceptable research strategy (Myers, 2009; Yin, 2011), Figure 2 outlines the strategy adopted in this research. There are three phases in this research, phase 1 understanding aspects of the literature; exploring researcher perceptions and phase 3 future data collection and analysis. Only phase 1 and phase 2 will be reported upon in this paper. Phase 1 of the research is qualitative in nature. It was important to use a qualitative approach in this phase of the research because the researchers wanted to develop a better quantitative understanding of researchers' perceptions of issues affecting academic dishonesty. Phase 1 constituted a review of the extent literature and a brainstorming session, in order to develop a questionnaire focused on issues that affect academic dishonesty.

In this research, a 5-point Likert scale questionnaire was used for data collection. Using a 5-point Likert scale questionnaire for data collection is an acceptable approach (Sachdev and Verma, 2004; Bouranta, Chitiris and Paravantis, 2009). Likert scales were used because the literature suggests that 5-point scales are less confusing to understand, can increase response rates and is easy to use by respondents (Babakus and Mangold, 1992; Devlin, Dong and Brown, 1993). The 5-point Likert response format ranged from "strongly agree = 5" to "strongly disagree = 1". The questionnaire was piloted and refined accordingly. The final version of the instrument was a one-page questionnaire comprised of 3 sections: a section for demographic data, 26 items on a 5-point Likert scale and a section for comments.

In phase 2 of this research, the questionnaire was administered, the data was collected and then analysed.

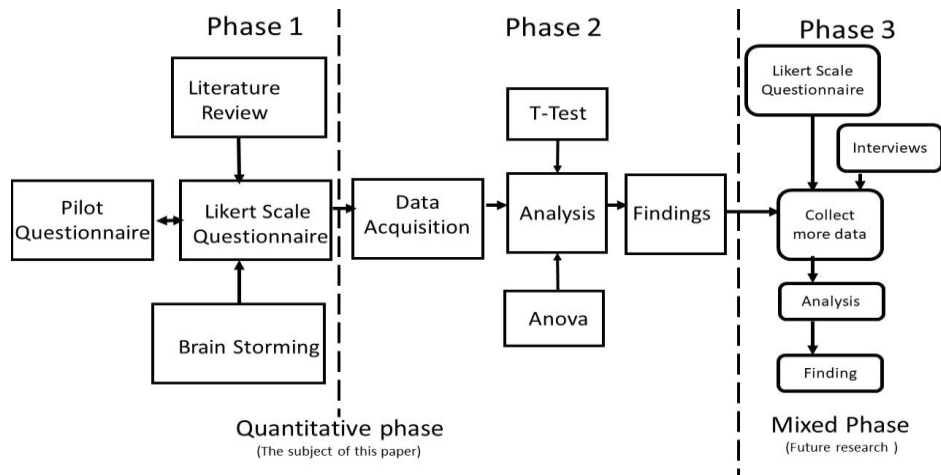


Figure 2: Research Approach

### 3.1 The data collection instrument

The questionnaire comprised 26 items (see Table 1) and the items in the questionnaire were classified as follows: Research Pressures, Electronic Deterrent, Writing Challenges, Outsourcing, Data Challenges, Plagiarism, Database, and Electronic Sources. For each question, respondents had the option of Strongly agree, Agree, Undecided, Disagree and Strongly disagree.

Table 1: Questionnaire Instrument

Question	Categories	Likert Scale Items
Question 1.	Pressure	I feel pressured to publish.
Question 2.		I feel pressured to publish within a shorter time frame.
Question 3.		I feel pressured by my line manager to publish.
Question 26.		I feel pressured to do other university activities such as administration or community engagement
Question 5.	Electronic Deterrent	I do not understand the academic review process.
Question 7.		Turn-it-in is a useful tool for me to avoid plagiarism.
Question 8.	Writing Challenges	iThenticate is a useful tool for me to avoid plagiarism.
Question 4.		I find academic writing challenging.
Question 6.	Outsourcing	I have received insufficient training in academic writing.
Question 24.		It is ok to hire a third party to collect my data.
Question 25.		It is ok to hire a professional to write aspects of my research.
Question 11.		It is ok to crowdsource aspects of my literature.
Question 21.	Data Challenges	It is ok to hire professional academic writing services to assist me write.
Question 9.		I feel overwhelmed with the amount of data that I must manage.
Question 15.		Librarians are key academic resources.
Question 10.	Plagiarism	I find it difficult to identify false information.
Question 17.		I have received insufficient training in anti-plagiarism.
Question 18.		Copying others' work without citing them constitutes plagiarism.
Question 19.		There are serious consequences if I violate plagiarism policy.
Question 20.	Database	Copying my own submitted work does not constitute plagiarism.
Question 12.		I do not understand how to use academic databases.
Question 13.		The language used to search academic databases is hard to learn.
Question 14.	Electronic Sources	The academic database interface is complicated.
Question 16.		Google Scholar is a legitimate academic resource.
Question 22.		I do not trust open access journals.
Question 23		I only trust the established academic publishing companies i.e Elsevier, Springer, Wiley-Blackwell, Taylor & Francis and Sage

The scores for questions 5, 6, 10,12,17,20 and 22 were reversed as they were stated in the negative.

### 3.2 The Sample

The selection of appropriate informants for any academic research is a challenging and time-consuming task for a researcher. The informants were selected only from public higher education institutions in South Africa. A



total of 53 informants provided data for this study. Table 2 provides a summary of the characteristics of the informants that participated in this research.

**Table 2:** Characteristics of the Sample

		Total
Age	At most 35 years	25
	36-45 years	12
	>45 years	9
	Did not answer the question	7
Gender	Male	23
	Female	20
	I prefer not to answer this question	2
	Did not answer the question	8
Type of employment	Fulltime	39
	Not Fulltime	9
	Did not answer the question	5
Years of experience	At most 3 years	14
	4-5 years	8
	> 5 years	29
	Did not answer the question	2
Researcher experience	Emerging	45
	Intermediate developed	4
	Established	1
	Did not answer the question	3

The research population for the study was academics who are involved in research activities. An anonymous paper-based questionnaire was distributed to academics that fell within the lead researcher’s community of practice who are involved with research and supervision.

#### 4. Data Analysis

The purpose of this research was to develop a better understanding of the issues that affect academics perceptions towards academic dishonesty. The first step was to test the reliability of the questionnaire. A reliability analysis was carried out on the instrument comprising 26 items. The Cronbach’s alpha showed the instrument to reach acceptable reliability,  $\alpha = 0.791$ . The statements were then ranked by the mean value.

**Table 3:** Statements Ranked by Mean Value

Rank		Minimum	Maximum	Mean	Std. Deviation
1.	Q18. Copying others’ work without citing them constitutes plagiarism.	3	5	4.76	.496
2.	Q19. There are serious consequences if I violate plagiarism policy.	2	5	4.69	.612
3.	Q15. Librarians are key academic resources.	1	5	4.02	1.276
4.	Q26. I feel pressured to do other university activities such as administration or community engagement	1	5	3.90	1.429
5.	Q16. Google Scholar is a legitimate academic resource.	1	5	3.89	1.031
6.	Q4. I find academic writing challenging.	1	5	3.63	1.237
7.	Q7. Turn-it-in is a useful tool for me to avoid plagiarism.	1	5	3.63	1.121
8.	Q1. I feel pressured to publish.	1	5	3.60	1.261
9.	Q2. I feel pressured to publish within a shorted time frame.	1	5	3.57	1.323
10.	Q23. I only trust the established academic publishing companies i.e Elsevier, Springer, Wiley-Blackwell, Taylor & Francis and Sage	1	5	3.55	1.170
11.	Q9. I feel overwhelmed with the amount of data that I must manage.	1	5	3.48	1.213
12.	Q3. I feel pressured by my line manager to publish.	1	5	3.36	1.331
13.	Q8. iThenticate is a useful tool for me to avoid plagiarism.	1	5	3.29	.825

14.	Q10. I find it difficult to identify false information.	1	5	3.28	1.081
15.	Q6. I have received insufficient training in academic writing.	1	5	3.13	1.284
16.	Q17. I have received insufficient training in anti-plagiarism.	1	5	3.09	1.348
17.	Q5. I do not understand the academic review process.	1	5	2.91	1.165
18.	Q11. It is ok to crowdsource aspects of my literature.	1	5	2.87	.921
19.	Q14. The academic database interface is complicated.	1	5	2.86	1.161
20.	Q22. I do not trust open access journals.	1	5	2.83	1.105
21.	Q24. It is ok to hire a third party to collect my data.	1	5	2.58	1.273
22.	Q13. The language used to search academic databases is hard to learn.	1	5	2.42	1.016
23.	Q20. Copying my own submitted work does not constitute plagiarism.	1	5	2.36	1.272
24.	Q21. It is ok to hire professional academic writing services to assist me write.	1	5	2.31	1.197
25.	Q12. I do not understand how to use academic databases.	1	5	2.04	.999
26.	Q25. It is ok to hire a professional to write aspects of my research.	1	4	1.64	.811

The next step in the analysis was to administer the Levene’s statistic to test homogeneity of variance for the different categories, as illustrated in Table 4. In the context of this study, the researchers wanted to investigate if the respondents had the same attitudes to issues affecting plagiarism. All p values are > 0.05, the variance can be assumed to be homogeneous.

**Table 4:** Levene's Test for Equality of Variances *p* values

		Gender	Type of Employment	Type of Researcher
1.	Pressure	.177	.262	.358
2.	Electronic Deterrent	.425	.716	.048
3.	Writing Challenges	.058	.180	.239
4.	Outsourcing	.986	.671	.671
5.	Data Challenges	.957	.763	.235
6.	Plagiarism	.076	.350	.974
7.	Database	.632	.417	.229
8.	Electronic Sources	.134	.612	.236

Finally, a One-Way ANOVA test was conducted using age as a grouping to investigate if there is a statistically significant difference between group means. For all categories the significance values are greater than 0.05 except for Database were  $p = 0.06$ , which is below 0.05. Therefore, there is a statistically significant difference in the mean for the category of Database.

**Table 5:** Summary of One-Way ANOVA – Age

		ANOVA				
		Sum of Squares	df	Mean Square	F	Sig.
Pressure	Between Groups	1.673	2	.836	.975	.386
	Within Groups	36.902	43	.858		
	Total	38.575	45			
Electronic deterrent	Between Groups	.793	2	.397	.712	.496
	Within Groups	23.951	43	.557		
	Total	24.745	45			
Writing challenges	Between Groups	1.987	2	.994	1.043	.361
	Within Groups	40.969	43	.953		

	Total	42.957	45			
Outsourcing	Between Groups	1.767	2	.884	2.110	.134
	Within Groups	18.007	43	.419		
	Total	19.774	45			
Data challenges	Between Groups	.368	2	.184	.412	.665
	Within Groups	19.201	43	.447		
	Total	19.568	45			
Plagiarism	Between Groups	.580	2	.290	.816	.449
	Within Groups	15.286	43	.355		
	Total	15.867	45			
Database	Between Groups	6.396	2	3.198	5.874	.006
	Within Groups	23.409	43	.544		
	Total	29.804	45			
Electronic sources	Between Groups	.606	2	.303	.980	.383
	Within Groups	13.279	43	.309		
	Total	13.884	45			

## 5. Discussion

When the statements were ranked by mean value, it is interesting to note that academics are aware of gross plagiarism and the consequences of plagiarism (Rank 1 and 2). (Rank 3) Academics agree that librarians are key assets in the academic enterprise. (Rank 4) Academics feel pressured to be involved with administration or community engagement and (Rank 5) academics see Google Scholar as a legitimate academic resource.

Academic seeing Google Scholar as a legitimate academic resource is a concern because Google Scholar only indexes academic papers, Google Scholar does not test the veracity of the peer review process or the credibility of the claims made in these papers. The Levene's statistic indicated that the variance can be assumed to be homogeneous, this means the respondents had the same perceptions about the issues that they were asked about. Finally, the One-Way ANOVA by Age indicated the DataBase has a difference between age groups. Further investigation is required as to the nature of these differences between the groups. This preliminary research confirms ongoing concerns about academic dishonesty (Singh, 2015, 2017; Singh and Remenyi, 2016; Casadevall, 2019).

## 6. Limitations of this study

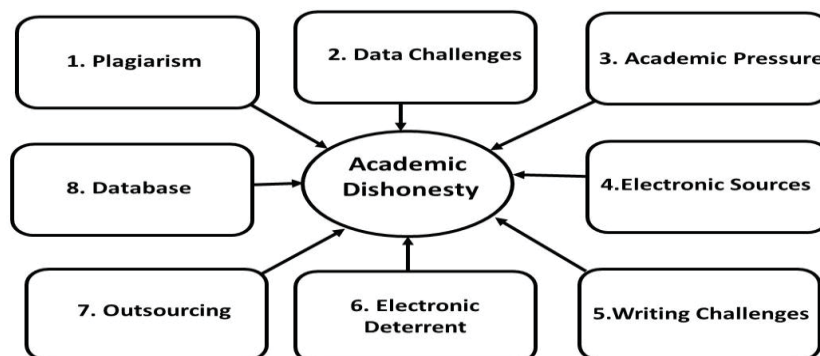
This study has two limitations. The first is that in this study data was only collected from informants in the public sector higher education space in South Africa. No special effort was made to collect data from private higher education institutes in South Africa. The second limitation is that the sample size is 53, it is not possible to conduct sophisticated statistics analysis, such as factor analysis (MacCallum et al., 1999; Mundfrom, Shaw and Ke, 2005), with a sample of 53 informants. However, this preliminary data does give us insight into how these researchers perceive the issues related to plagiarism.

## 7. Conclusion

The initial findings of this research indicate that academic dishonesty is complex and affected by several factors. The surveyed informants are aware of the issues related to academic dishonesty.

In summary, as outlined in Figure 3, the surveyed researchers are aware of: (1) the negative effects of plagiarism, (2) the value of key stakeholders in managing the data challenge issues. Researchers acknowledge that they feel increasing (3) academic pressure and follow the path of least resistance when it comes to sourcing academic literature by using (4) electronic sources. Researchers find it difficult to (5) write and have unrealistically faith in (6) electronic deterrents to protect them from plagiarism. Researchers acknowledge that

(7) outsourcing aspects of their research to outside parties is a form of academic dishonesty and finally researchers have a respectable understanding of (8) academic databases.



**Figure 3:** Factors Affecting Academic Dishonesty Revised

It is interesting to note that one of the anonymous reviews pointed out that “perhaps the paper should address types of policies that a university could put in place to ensure that dishonesty is minimised,” universities have moved from a self-policing system to a policy-driven system to discourage academic dishonesty. However the same reviewer pointed out that “Of course there is the problem inherent in the system which I face some years ago when I asked for a plagiarism check on some work that I was examining but I was told that my request for this plagiarism test could be interpreted as impugning the integrity of the student.” Policies are only as good as people’s acceptance of these policies. Academic dishonesty is a challenge that cannot be driven away solely by policy, but probably, by a combination of academic attitudes and policy. Respectable research is generally recognised by peers, research methodology and academic writing cannot be regulated - research methodology and academic writing can be used to either honestly support the research endeavour or dishonesty prop up research.

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# Appendix

## Exhibit A

The image displays two screenshots of the Times Live website. The top screenshot shows a news article titled "Student 1, University 0: UCT loses first battle in plagiarism fight" published on 23 November 2018 at 06:46 by Philani Nombembe. The article is categorized under "SOUTH AFRICA". The page includes social media sharing buttons for Facebook, Twitter, Pinterest, Email, and Print. A "Times SELECT" subscription prompt is visible on the right side, along with a "MOST READ" section featuring a story about a Thai junta party.

The bottom screenshot shows another news article titled "UJ finds student's claims of plagiarism to be baseless" published on 18 April 2018 at 14:40 by Kgaugelo Masweneng. This article is categorized under "WORLD". It also features social media sharing buttons and a "Times SELECT" subscription prompt. The "MOST READ" section on the right highlights a story about Ed Sheeran at a stadium.

The screenshot shows a web browser with two tabs: 'NWU finds evidence of plagiaris...' and 'plagiarism in south african univer...'. The address bar shows the URL 'https://www.news24.com/SouthAfrica/News/nwu-finds-evidence-of-plagiarism-against-two-staff-members-ten-l...'. The browser's top bar includes 'Apps', 'Srimad Bhagavata...', 'Scientific Poster Po...', 'Google Scholar', 'Literature Review HQ', 'Free Digital Books', and 'YouTube'. The News24 website header features navigation links for 'OLX', 'PROPERTY24', 'CAREERS24', 'SUPERBALIST', and 'AUTOTRADER', along with a 'LAST UPDATED: 2019-03-24, 20:11' timestamp. The main navigation menu includes 'News', 'Voices', 'Business', 'Sport', 'Lifestyle', 'Video', 'Focus', 'Jobs', 'Property', and 'Travel'. The article title is 'NWU finds evidence of plagiarism against two staff members, ten let off the hook', dated '2019-03-21 09:05' by 'Canny Maphanga'. The News24 logo is present, along with social media icons for Facebook, Twitter, Google+, and Email. The article text states: 'Two staff members at North West University (NWU) have been implicated in a prima facie case of plagiarism and misrepresentation. The two have been instructed to refund the institution for fees paid for the publication of the implicated article. This comes after an anonymous group accused 21 academics (staff as well as former staff members) within the institution of plagiarism. In a 14-page letter, the group called on the university to reveal the details of an investigation into a plagiarism probe, asking for, among others, the names of any academics who may have been'. To the right, a 'MOST READ' sidebar lists: 'Get paid c world as p media exp', 'UPDATE: from strar', 'White peo', 'New twist drama', and 'White peo Malema'. At the bottom right, a 'news24' logo is above a 'POLITI season closer t' banner. The North-West University logo and name in Afrikaans and Dutch are also visible.

# Reframing Plagiarism in Academia 4.0

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**Abstract:** The failure to acknowledge the ideas or writing of another and presenting of the ideas or writings of another as if they are one's own are longstanding misdemeanours and challenges in academic writing and publishing. As currently defined, plagiarism is correctly regarded as serious academic misconduct. However, research processes and outputs are now being influenced by: greater access to electronic resources, open access journals, Google scholar and other search engines, plagiarism detection software and other elements of the so-called fourth industrial revolution. It can be argued that these factors are contributing not only to the number of instances of plagiarism, but also how plagiarism is manifest. Within a "normal science" paradigm, as described by Kuhn, it is inevitable that there are substantive overlaps in authors' reviews of literature and prior research. Conventionally, authors are expected to use their own words when reviewing prior research, but mere paraphrasing the words of other authors adds little to no value. In this paper it will be shown that the current definition of plagiarism fosters trivial paraphrasing of other authors, rather than explicit application of that prior knowledge or the synthesis of new understanding from existing knowledge. An underlying assumption of the current definition of plagiarism is that absence of direct attribution implies the author's claim to originality. It will be posited that plagiarism can and should be reframed to exclude implied claims of originality, and to regard readily accessible knowledge as "common knowledge" which therefore requires no direct attribution. Such reframing could weaken the constraints of "normal science", and thereby encourage more efficient research and expedite paradigm shifts.

**Keywords:** Plagiarism, Common knowledge, Attribution, Normal science, Paradigm shift

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## 1. Introduction

*"If you steal from one person, that's plagiarism;  
if you steal from a lot of people, that's research."  
(Internet meme)*

This overused internet meme is widely attributed to American novelist and short story writer, George Martin, but has also been attributed to American playwright, raconteur, and entrepreneur, Wilson Mizner. While it typically elicits a smile, this meme is not only untrue, as any serious academic researcher would affirm, but it also trivialises a pervasive and serious example of academic misconduct.

There are many definitions of plagiarism. For the purposes of this paper, it seems unnecessary to delve into the nuances and semantics of these multiple definitions, because there is broad consensus in academia of notion of plagiarism as theft of the words or thoughts of others. However, there is a diversity of views and levels of understanding of the role of intention, appropriate levels of attribution, what constitutes common knowledge, recycling of prior work (generally referred to as self-plagiarism) and similar subtleties. It is when considering these finer issues that context matters. The academic ecosystem is evolving rapidly, and this changing context warrants a review and potential reframing of plagiarism.

*Industry 4.0*, also referred to as the *fourth industrial revolution*, is the term that has been coined to encapsulate current emerging and disruptive technologies in industry, such as cyber-physical systems, the internet of things, cloud computing and artificial intelligence. It is a progression from the first industrial revolution, characterised by mechanisation, water and steam power; the second industrial revolution, characterised by electricity and mass production; and the third industrial revolution characterised by computerisation and automation. In this paper, *Academia 4.0* is therefore used as a metaphor for the currently emerging and disruptive trends in tertiary education.

The focus of this paper is the context of academic writing, comprising journal articles, theses, dissertations, research reports and the like. The reasons that students and researchers plagiarise include managing workload, ease of access to sources, inadequate knowledge of subject matter and simple laziness (Kayaoğlu, Erbay, Flitner, & Saltaş, 2016). It is not anticipated that these reasons will change fundamentally in *Academia 4.0* and therefore these will not be discussed in this paper.



## 2. Emergence of Plagiarism

### 2.1 Evolution of plagiarism

The relentless pursuit of knowledge in academia is competitive and obligatory, as captured in the maxim “publish or perish”, and the metaphor of dwarfs standing on the shoulders of giants is often used to describe academic authors, who themselves aspire to become “giants” one day. It is not within the scope of this paper to review the origins and history of plagiarism, and there are various authors who have provided comprehensive and informative synopses (for example Sutherland-Smith, 2010). Common themes of these perspectives is that plagiarism has existed since time immemorial, that it is referred to using criminalising language, and that there is not necessarily universal consensus on the interpretation or appropriate consequences. However, most research is carried out within existing frameworks or paradigms and has been referred to as “normal science” (Kuhn, 1962).

### 2.2 Acceptable replication and reuse

It would be inaccurate to suggest that all replication and reuse of the words or ideas of others without acknowledgment is regarded as plagiarism.

#### 2.2.1 Academic phrasebooks

There are many commonly used phrases in academic writing, to such an extent that some have become the butt of internet jokes and memes, examples of which are given in Table 1. While these particular interpretations are obviously not intended to be taken seriously, there are numerous internet resources that give examples of useful phrases and sentences for the benefit of academic authors, particularly those not writing in their mother tongue. The adoption of such phrases and sentences is so widespread that their use cannot reasonably be construed as plagiarism.

**Table 1:** Commonly used phrases in academic writing and their correct interpretations

Common phrases	Correct interpretations
Typical results are shown ...	This is the prettiest graph.
In a series of cases ...	Thrice.
Three of the samples were chosen for detailed study ...	The results of the others didn't make any sense.
While it has not been possible to provide definite answers to these questions ...	An unsuccessful experiment, but I still hope to get it published.
The most reliable results are those obtained by Jones ...	He was my graduate assistant.
A statistically oriented projection of the significance of these findings...	A wild guess.
According to statistical analysis...	Rumour has it.
It is clear that much additional work will be required before a complete understanding of the phenomenon occurs ...	I don't understand it.
It is believed that...	I think.
Of great theoretical and practical importance ...	Interesting to me.
In my experience ...	Once.
It is generally believed that ...	A couple of other people think so, too.
Correct within an order of magnitude ...	Wrong.
A careful analysis of obtainable data...	Three pages of notes were obliterated when I knocked over a glass of wine.
In case after case ...	Twice.
These results will be shown in a subsequent report...	I might get around to this sometime, if I'm pushed / funded.
A definite trend is evident ...	These data are practically meaningless.
It has long been known ...	I didn't look up the original reference.

Source: Various internet web sites.<sup>†</sup>

<sup>†</sup> The sequence of these phrases has been randomised so as not to reproduce the original sources exactly.

#### 2.2.2 Imitation and Flattery

Oscar Wilde is credited with the adage “Imitation is the sincerest form of flattery that mediocrity can pay to greatness.” Many witticisms are attributed to this Irish poet and playwright, but this saying has particular

relevance in academia. In some cultures, it continues to be the case that the use of the words or ideas of others is deemed appropriate and respectful of seniority and authority (Park, 2003). While this is not prevalent in Western cultures, it does suggest that plagiarism needs to be viewed with cultural sensitivity.

### *2.2.3 Code reuse in software engineering*

Plagiarism is particularly challenging in the software engineering discipline. Gibson (2009) notes that it is quite normal for existing code to be used in the development of new software, and discusses a code of practice specifically for use in academia to differentiate between legitimate re-use and plagiarism. Object oriented programming and example embedding (Barzilay, 2011) are examples of widely used software development techniques that involve legitimate and intentional reuse of other developers' code, which would not be regarded as plagiarism.

## **3. Contemporary plagiarism**

Verbatim plagiarism in academic texts – comprising phrases, sentences, paragraphs or more that have been copied from original sources and replicated in an academic text without appropriate attribution – is surely the most straightforward and easily understood form of plagiarism. It is equally the most easily perpetrated form of plagiarism, particularly with the availability of electronic and online academic content.

### **3.1 Plagiarism software**

There is a plethora of software available to address plagiarism. It is intriguing to consider how these various software products are described: they are labelled variously as “plagiarism detection”, “plagiarism analysis”, “plagiarism checking”, “anti-plagiarism”, or “plagiarism prevention” software. There are two problems with these labels. Firstly, an implied claim that the software itself might prevent plagiarism is farfetched; only the researchers or authors themselves can avoid plagiarising with the software providing them some technological support. Secondly, current software packages use algorithms that identify similarities and matching text, making it particularly reliable at identifying verbatim plagiarism. However, not all forms plagiarism are manifest as similar or matching text. The theft of the thoughts of others may have no similar or matching text whatsoever and may therefore remain undetected, yet remains plagiarism.

The problems of both false-positives and false-negatives do not negate the benefit and utility of these software. However, they do require more than a superficial and simplistic interpretation of a similarity metric. The software has potentially given academia a false sense of security, because it has changed how researchers and authors compose their works. Writing and editing to evade plagiarism software has become a specialised and valued skill.

### **3.2 Paraphrasing**

When reviewing literature and prior research, it is common practice to paraphrase the text of the original authors. The principle behind this is that it demonstrates one's understanding and interpretation of the original text in the context of one's own research. The logic is that through understanding and interpretation of the original text in the unique context of one's research, one will end up paraphrasing the original text. However, the reciprocal logic does not necessarily apply: paraphrasing the original text do NOT guarantee or imply that one has necessarily understood the original text and applied it to one's own research.

Paraphrasing can be a mere grammatical exercise. There are websites and applications that will perform the function, albeit with varying degrees of competence, without any intellectual input from the researcher. Indeed, this can be an effective means of evading plagiarism software. Therefore, it cannot be assumed that paraphrased text is free of plagiarism.

### **3.3 Anecdotal experience**

Although Ison (2015) did not find that that internet had had a significant impact on the prevalence of plagiarism at doctoral level, this author's experience of postgraduate student research suggests that the reliability of software that can identify verbatim or cut-and-paste plagiarism has proved to be a deterrent.

However, there have been perhaps unintended consequences: while there has been a decline in verbatim plagiarism, the relative number of instances of more subtle forms of plagiarism has undoubtedly increased.

3.3.1 Randomisation

It was indicated in a note to **Table 1** that the entries in the table had been resequenced. Such reordering of itemised lists, or transposing of words or phrases is a common method used by academic authors to evade detection of plagiarism by the applicable software.

3.3.2 Word switching

The use of thesauruses together with the “find and replace” word processing function makes it straightforward to edit source text so that the words no longer match the original. In the comparison between the student’s submission and the original source given in **Table 2** it is clear that the words “dominant players” or “the dominant” have been substituted for “monopolies” and “monopoly” respectively.

**Table 2:** Comparison of student’s submission and original source illustrating word switching

Student’s submission	Original source †
<p>Dominant players have existed throughout much of human history. This is because powerful forces exist both for the creation and maintenance of dominant players. At the root of these forces is the natural human desire for wealth and power together with the fact that dominant players can be immensely profitable and provide their owners with tremendous financial, political and social power.</p> <p>The Dominant is a term used by economists to refer to the situation in which there is a single seller of a <i>product</i> (i.e., a good or service) for which there are no close substitutes. The word is derived from the Greek words <i>monos</i> (meaning <i>one</i>) and <i>polein</i> (meaning <i>to sell</i>). (Swannell, 2006)</p>	<p>Monopolies have existed throughout much of human history. This is because powerful forces exist both for the creation and maintenance of monopolies<sup>5</sup>. At the root of these forces is the natural human desire for wealth and power together with the fact that monopolies can be immensely profitable and provide their owners with tremendous financial, political and social power.</p> <p><i>Monopoly</i> is a term used by economists to refer to the situation in which there is a single seller of a <i>product</i> (i.e., a good or service) for which there are no close substitutes. The word is derived from the Greek words <i>monos</i> (meaning <i>one</i>) and <i>polein</i> (meaning <i>to sell</i>).</p>

† The Linux Information Project (2005). Monopoly: A Brief Introduction. Retrieved from <http://www.linfo.org/monopoly.html>

Plagiarism software would generally draw attention to instances of plagiarism of this nature. The absurdity of this example is patently obvious in the second paragraph in which the etymology of the word “monopoly” is incongruously used to explain the derivation of the word “dominant”.

3.3.3 Paraphrasing as a means to avoid plagiarism software

In the following example the student’s submission returned a relatively low similarity index of 5%. However, closer inspection revealed that extensive sections of the Literature Review consisted of systematic paraphrasing of consecutive sentences from other authors’ publications. Evidence led at the student’s disciplinary hearing indicated that approximately 63% of Literature Review had been edited in this fashion.

By way of an example, gives one paragraph of the student’s submission and the original source text. Sentences have been shown separately for greater clarity.

Student’s submission	Original source †
<p>Higher financial literacy levels have been associated with superior financial decision making.</p> <p>Hilgert et al. (2003), establish that individuals with higher financial literacy scores usually pay their credit cards on time, diversify their investment portfolios, and refinance their mortgages.</p> <p>Individuals with lower levels of financial literacy usually incur credit card fees that are 50% higher than their peers, because of lack of awareness of the terms of credit cards (Lusardi and Tufano, 2009).</p> <p>The chief costly financial blunder that older family units make is not refinancing their mortgages in an environment where interest rates are falling.</p> <p>Mimbs-Johnson and Lewis (2009), established that characteristics related to financial sophistication are good predictors of refinancing behaviour that maximises wealth.</p> <p>Investors with more financial knowledge diversify their investment portfolios and do not offload their holdings after a downturn on the stock market (Servon &amp; Kaestner, 2008).</p>	<p>Higher financial literacy scores have been linked to higher quality financial decisions.</p> <p>For example, Hilgert, Hogarth and Beverly (2003) find that higher financial literacy scores predict on-time credit repayment, investment diversification, and mortgage refinancing.</p> <p>Lower financial literacy is associated with incurring fees that are 50% higher on credit cards, particularly fees that require a more sophisticated awareness of credit terms (Lusardi and Tufano, 2009).</p> <p>A particularly costly financial mistake for older households in a falling interest rate environment is the failure to refinance a mortgage</p> <p>Campbell (2006) finds that characteristics associated with financial sophistication predict wealth-maximizing refinancing behavior.</p> <p>More financially literate investors hold better diversified portfolios (Von Gaudecker, 2015) and are less likely to sell equities after a stock market decline (Bucher-Koenen and Ziegelmeier, 2013).</p>

† Finke, M. S., Howe, J. S., & Huston, S. J. (2016). Old age and the decline in financial literacy. *Management Science*, 63(1), 213-230.

While the original words have not always been used, it is clear that the student has faithfully reproduced the thoughts and ideas of the original authors without any acknowledgment. This is termed ideological- or style plagiarism, and may be considered to be an indication of a deliberate attempt to “outsmart” plagiarism software. It is interesting to note that the student replaced the original citations in the second last and last sentences, which may be a further indication of intent.

**Table 3:** Comparison of student’s submission and original source illustrating ideological plagiarism

Student’s submission	Original source †
Higher financial literacy levels have been associated with superior financial decision making. Hilgert et al. (2003), establish that individuals with higher financial literacy scores usually pay their credit cards on time, diversify their investment portfolios, and refinance their mortgages. Individuals with lower levels of financial literacy usually incur credit card fees that are 50% higher than their peers, because of lack of awareness of the terms of credit cards (Lusardi and Tufano, 2009). The chief costly financial blunder that older family units make is not refinancing their mortgages in an environment where interest rates are falling. Mimbs-Johnson and Lewis (2009), established that characteristics related to financial sophistication are good predictors of refinancing behaviour that maximises wealth. Investors with more financial knowledge diversify their investment portfolios and do not offload their holdings after a downturn on the stock market (Servon & Kaestner, 2008).	Higher financial literacy scores have been linked to higher quality financial decisions. For example, Hilgert, Hogarth and Beverly (2003) find that higher financial literacy scores predict on-time credit repayment, investment diversification, and mortgage refinancing. Lower financial literacy is associated with incurring fees that are 50% higher on credit cards, particularly fees that require a more sophisticated awareness of credit terms (Lusardi and Tufano, 2009). A particularly costly financial mistake for older households in a falling interest rate environment is the failure to refinance a mortgage. Campbell (2006) finds that characteristics associated with financial sophistication predict wealth-maximizing refinancing behavior. More financially literate investors hold better diversified portfolios (Von Gaudecker, 2015) and are less likely to sell equities after a stock market decline (Bucher-Koenen and Ziegelmeyer, 2013).

† Finke, M. S., Howe, J. S., & Huston, S. J. (2016). Old age and the decline in financial literacy. *Management Science*, 63(1), 213-230.

### 3.3.4 Similarities with multiple sources.

The proliferation of easy access to electronic sources can result in uncertainty over the true origins of some material, as highlighted by the ambiguity regarding the origin of the opening internet meme above. When analysing a document using plagiarism software, it is not uncommon that specific phrases or word sequences are found to be similar or identical to multiple uncited sources. This would be neither unusual nor unexpected when multiple researchers are working within the same paradigm (Kuhn, 1962). Excluding cases of discipline specific jargon and technical terms, a number of uncertainties arise. For example, if the author did indeed use the words or ideas of another without attribution, it is uncertain from which source the words or ideas were plagiarised. In an environment in which academic misconduct is increasingly common (Singh & Remenyi, 2016) it is plausible that words or ideas have been plagiarised from previously plagiarised sources. While there is more than one way to skin a cat, it is surely impracticable for every author to describe a frequently discussed or universally accepted concept in their very own words. It is conceivable that the specific phrases or word sequences merely constitute common knowledge which, by convention, do not need to be cited.

Ferro and Martins (2016) refer to *common knowledge* as a “grey area” in academia, citing Neville (2010) in describing it as knowledge that is either commonplace in a specific discipline or field of studies, or that is in the public domain. It is this latter description that has become particularly problematic with the proliferation of online and open access to academic sources. Authors can and do argue quite cogently that online and open access journals are *de facto* in the public domain, and as such can perhaps be considered to be common knowledge.

## 4. Changing the paradigm of academic writing in Academia 4.0

A combination of passive voice and the third person is frequently used in academic writing. This can result in some ambiguity as to who has carried out the action or activity described. Where an in-text citation follows phrases such as “The data were gathered ...”, “Participants were asked ...”, “It was found that ...”, or “No significant difference was found ...”, it is clear that the sentence does not refer to the author’s own work. Conversely, when such phrases are not followed by a citation, by convention it is generally assumed that the action or activity was carried out by the author her- or himself. Therefore, by omitting a citation of the work of

others, it may be alleged that the author has plagiarised. This can be unfortunate if the omission of the citation was a mere oversight or pertained to the grey area of common knowledge.

#### **4.1 Justification for a paradigm change**

In response to:

- authors expending undue time and energy merely avoiding plagiarism and adding no value,
- ease of access to prior research,
- paraphrasing and plagiarism software, and
- the proliferation of online resources,

this author proposes that plagiarism be reframed as a worthless and pointless activity; a complete waste of time and energy. The objective of changing the paradigm of academic writing would be to remove all incentives for authors to plagiarise, but to make it essential to acknowledge prior research in order to be recognised for making a contribution to knowledge.

Fundamental to the paradigm change of academic writing are the criteria against which academic writing is evaluated by supervisors, mentors, examiners, reviewers, editors and the like. The author of this paper proposes a paradigm for academic writing in Academic 4.0 in which:

1. seminal and significant prior research and other sources in the public domain are regarded as common knowledge and need to be acknowledged by citation, but not reviewed;
2. unreferenced statements, claims, findings, etc. are assumed to be drawn from prior research for which the author takes and is given no credit; and
3. the merit of academic work is judged solely on the basis of that which authors explicitly claim as their own and which patently enhances the extant theory or body of knowledge.

While at first sight, such a paradigm might seem to be taking an unduly lenient view of plagiarism, it is suggested that this will be an altogether more rigorous and potentially demanding approach to academic writing. In this paradigm, unattributed findings would be disregarded as academic puffery and poor academic writing, while plagiarism would comprise authors explicitly taking credit and responsibility for statements, activities, findings, etc. that were not their own.

#### **4.2 Direct impact of a change of paradigm of academic writing**

The most obviously impact of the proposed change of paradigm of academic writing would be substantial de-emphasis of the traditional literature review. The justification for this is that the seminal and significant published works would have been acknowledged and would be being readily accessible, and therefore restatement would be redundant. However, authors would need to familiarise themselves and be thoroughly acquainted with the existing theory or body of knowledge in order to lay claim to their unique contribution.

Similarly, those evaluating academic work (for example: research supervisors, mentors, examiners, reviewers, and editors) would also need to be sufficiently conversant with the discipline in order to make a meaningful evaluation of the work.

The de-emphasis of the traditional literature review and the corresponding intensified focus on the authors' explicit contribution would potentially reduce the recycling of knowledge that tends to occur in "normal science" (Kuhn, 1962). This would increase the likelihood of researchers challenging or at least questioning the essential assumptions of current frameworks, leading to paradigm shifts. Similarly, traditional publication metrics may need to be reconsidered as they are framed and understood within the current paradigm.

Finally, authors may need to adapt their writing style, as writing in the first person and active voice – as recommended in APA 6th Edition, Section 3.18 (American Psychological Association, 2010) – would necessarily become the new norm. While academic misconduct in the form of plagiarism and the related and more insidious practice of ghost-writing would not be eliminated, they would require a greater investment of time and intellect; the cost versus the benefit would largely mitigate against them.

## 5. Conclusion

There is an evolution in the manner in which academic misconduct is manifesting, driven at least in part by emerging technologies. Acknowledging the transition to *Academia 4.0*, mirroring the so-called fourth industrial revolution, it is suggested in this paper that there may be an alternative to the traditional definition and response to plagiarism.

It is posited that the relative ease of access to prior research and information has lessened the importance of the traditional literature, and that much more can now be thought of as common knowledge than has been the case historically. The suggestion is that although attribution of sources remains fundamental, in future authors must explicitly claim their own interpretation of and contribution to knowledge, and unattributed or unsubstantiated statements should be disdained and discounted as academic puffery rather than being considered indicators of potential plagiarism.

The proposed reframing of plagiarism and placement of greater emphasis on unique, new knowledge generation may be more intellectually onerous on researchers and evaluators, and the quantity of research may decline. However, it is suggested that the quality and impact of the research will be substantially enhanced.

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# A Multiphase Mixed Methods Approach to Internationalisation of South African Higher Education: A Research Framework Outline

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**Abstract:** Higher education internationalisation (HEI) has become a significant priority to policy makers and education providers around the globe. Motivated by globalisation, HEI has become politically strategic and economically promising for nations, governments and universities to position themselves in a global market. The paper's aim is to provide a methodology for the study of a dynamic and reformative South African HEI framework based on the transformative force (i.e. adjustment of change, learning, shared knowledge, internationalisation, globalisation and institutionalised memory) of HEI in the People's Republic of China. A multiphase mixed methods approach is used in determining a South African higher education reformative internationalisation framework based on Chinese experiences. The interpretivist paradigm constitute the underlying research approach. Multiphase mixed methods will be employed to collect, analyse and integrate quantitative and qualitative data and will allow for a more complete and synergistic usage of data than separate quantitative and qualitative methodology. The multiphase mixed methods design include three phases that come together to answer the focal research question. The focal research question and will be addressed through content analysis (Phase I), in-depth interviews (Phase II) and surveys (Phase III). The significance of this research is aimed at arousing a better understanding of higher education policy issues in South Africa from a transformation perspective. This research will contribute to theory with respect to how internationalisation and globalisation influence higher education and the position of higher education in economic and social development. Furthermore, this research may also have practical significance for higher education policy and practice in South Africa and other comparatively positioned countries. It might expand knowledge and awareness of how internationalisation influences the unique circumstances and challenges of higher education reform in developing countries, especially a country in search of positioning itself in a globalised knowledge economy.

**Keywords:** Higher Education Internationalisation (HEI), Higher Education (HE), Multiple Mixed Methods, Transformative Forces, Reformative Framework, Internationalisation

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## 1. Introduction

Since 1994, the South Africa government gave precedence to three objectives in HE: namely redressing past injustice, human resource development, and improving democratic practices (Barnes 2006). After 25 years, South Africa's HE is alluded to as being in crisis (Marire 2017) and struggling towards a system that is nationally responsive and globally competitive. South Africa requires a HE system that leads social change by being receptive to the diverse and numerous socio-economic needs, staying relevant on the world stage and being aligned with distinct changes and rapid transformation of HE globally (Green and Hayward 1997). Although some inequalities have been addressed, the South African HE system did not succeed in delivering the required skills needed for economic and social transformation (Paadi 2014), and little evidence exist to indicate that HE has extended democratic values and practices (Steyn 2000).

This study address the second South African HE system requirement namely, to stay relevant in the global arena aligned with distinct changes and rapid transformation of HE globally. The study intends to propose a dynamic and reformative South African HE internationalisation framework based upon China's and South Africa's respective HE internationalisation aspirations and reforms within a historical context; China's HE internationalisation experience and response to the transformative force (i.e. adjustments to change, learning, shared knowledge, internationalisation, globalisation and institutionalised memory) influence; and the identification of distinct and shared HE internationalisation aspirations, conditions and challenges that exist in China and South Africa respectively.

The selection of China as reference research setting is based upon the rationale that China is the world's largest HE provider (Yeravdekar and Tiwari 2014); cast to adjust to modern-day challenges (Luo and Qin 2012);

its HE historic system evolution is well documented (Morgan and Wu 2011); has given priority to HE and promulgated various laws and policies to govern HE (Kang 2004); accentuates the global reputation of universities to develop the country (Reddy, Xie and Tang 2016); and the opening up of China present severe challenges to China's HE system (Yaisawarng and Ng 2014).

## **2. Reform of Higher Education Internationalisation in China and South Africa**

A sustainable HE system is a prerequisite for HE advancement, intellectual capacity positioning and for improving the national strength and competitiveness of any country. The principle of HEI is to create social and cultural networks, improve economic development, share knowledge, and contribute to an inclusive, caring, affluent and multinational world (Rensburg, Motala and David 2015). Nevertheless, current research are primarily done by occasional researching practitioners and applied HE researchers focusing on practical, rather than methodological research issues (Teichler 1996:212).

During the last three decades, although internationalisation of HE has been in high regard on institutional, regional, national, and international agendas, the concept of internationalisation is elusive and a portmanteau term (Maringe and Foskett, 2010; Robson, 2015). Due to evolving political, economic, socio-cultural, global, national, local, institutional and academic demands, internationalisation of HE is treated differently by countries, higher education institutions and their programme offerings (Teichler, 2004).

While governments and HEIs are keen to promote internationalisation, internal and external forces influence the direction and extent of internationalisation endeavours (Cuthbert 2002). HEI encompass various forms and characteristics and attaining a typical definition of internationalisation has not proven easy (Altbach, Reisberg and Rumbley 2009). The most cited definitions vis-à-vis HEI conclude that it is the process of integrating an international/intercultural dimension into the teaching, research and service functions of the institution (Knight and De Wit 1997:8); and involves the incorporation of global, international, intercultural dimensions into goals, objectives, content and delivery of HE (Knight 2015:2). For the purpose of this paper, HEI is deciphered as the dynamic engagement in the development of policies, plans, programmes, strategies and approaches at various management levels to propel internationality in HE.

The concept of internationalisation in HE, has been derived from the globalisation of education. It is predicted that the globalisation of HE will assume an essential role in China's socialist market economy as well as national development (Hu, 2012). Influenced by the global knowledge economy and China's aspiration to become more globally competitive, HE in China encounters both domestic and international challenges.

Throughout history, China has attached great importance to education and created multiple laws to develop education. The current importance of HE is reflected by the Outline of the National Program for Medium- and Long-Term Educational Reform and Development 2010-2020, which stipulates the new path of HE in the 21st century. This outline accentuates the global reputation of universities and disciplines with Chinese characteristics to develop the country and become the largest and arguably the most promising global education power (Li 2016).

As a traditional but also fast evolving society, China implemented the Reform and Opening Policy in the 1970s after which HEI became a real prospect. With progression to a socialist market economy, HE was confronted by reform difficulties. To meet the HE demands and to solve reform challenges, China embraced new education policies that was influenced by international and global forces. China's view of HEI remained for the most part unchanged since the late 19th century, and are primarily founded on acquiring Western knowledge and technology to resume China's global influence, rather than being a passive beneficiary subjective to other major world powers. Even though local priorities and measures have been transformed in accordance with the trends of the global political economy, China has positioned herself within this realm.

However, in the 2000s, careful consideration was given to China's HEI whereby knowledge was globally exported and universities contributed to global education (Yang 2010). It is projected that by 2025 students from Asia will constitute 70 per cent of global education, an expansion of 27 per cent since 2000, with China and India as key growth drivers that will produce more than half of global HE (Böhm et al. 2002:3). The objective to improve the global influence and standing of China's HE is distinctly demonstrated by China's education policies, particularly the 2003-2007 Action Plan for Revitalization of Education, the National Outline



for Mid- and Long-Term Education Planning and Development; and the Development of World-Class Universities and First-Class Disciplines.

In contrast, before 1994, there had been calls for transformation of South Africa's HE, but only with the inauguration of the first democratic government in 1994, an open HE system was adopted (Kahn 2007). The government was confronted by an education system that was divided, of unequal quality and challenged to provide a suitable skilled workforce. A critical government objective during this phase was the transformation of education. Two strategic policies directed this objective, including the Education White Paper 3 and the National Plan for Education. These two strategic policies express the importance of HE in the South African context. The White Paper declares that HE must reflect the changes that are taking place in our society and HE is regarded as part of the broader process of South Africa's political, social and economic transition, which includes political democratisation, economic reconstruction and development, and redistributive social policies aimed at equity (South Africa, Department of Education 1997:2; 1997:29). It furthermore underlined transformation of HE to the extent of sociological relations, structural transformation, efficiency, mergers of HEI, framing of one national HE system and institutional compliance to review inequality relating to accessibility, race and gender, and demographics of staff and students (Du Preez, Simmonds and Verhoef 2016). From an internationalisation perspective, it reflects an isolationism and inward-looking nationalism approach and a broader international view is largely ignored that may provide valuable insights to the improvement of local policies and practices of HEI.

The National Develop Plan: Vision for 2030 predicts that South Africa will be an active role-player not only in Africa, but subsequently also in global HE, and that HEIs will attract more international students and scholars (National Planning Commission 2011). On the contrary, HEI in South Africa lag behind these ideals, and although the Education White Paper 3 of 1997 and the National Plan for Education of 2001 regard HEI as a focal point of the interconnected world, limited integration of the concept of internationalisation exist in HEP (Malaza 2011). In addition, Kishun (2007) contends that internationalisation is an essential part of HE transformation in South Africa, but still has not been totally incorporated in the HE landscape. During the 2000s an outward-looking perspective starts to emerge, but without active action towards HEI. In order to shift from an inward- to outward-looking perspective a directional plan for the successful expansion of HEI is required. Although greater awareness of HEI exist, a directional plan that will propel HEI from optional to imperative, from periphery to centre stage is largely inexistent. A directional change to South Africa's internationalisation approach is needed, shifting the regionalised focus toward a more outward-looking, globalised focus, which may inspire innovative approaches toward an internationalisation framework suitable for South Africa's own specific context.

However, the current South African HE landscape is predominantly regarded as an elite, low participation and high attrition system, offering average quality education (Rensburg, Motala and David, 2015). Nearly 25 years later, South Africa's HE is disregarded by the public and frequently alluded to as being in crisis. There is also a broad perception that education reform did not accomplished the proposed outcomes envisioned after 1994 and can be prescribed to multifaceted reasons (Wedekind, 2013). The preceding can be grounded on South Africa's approach to develop a complex HE system without considering their ability to deliver quality education, as well as the multifaceted nature of adjusting the pre-1994 education systems. Moreover, the creation of a new HE system was emphasised, often acquired from various international milieus, which contributed to the existing challenges (Jansen, 2004). Another contributing factor is that by endeavouring to pave a new HE route, there was a focused attempt to enforce new models, which were not aligned with the HEI's narratives. This shaped an ideal environment for the formation of bureaucracies where own rationales were created and contributed to the current challenges in the HE environment (Wedekind, 2013).

South Africa can learn from China's experiences and approaches in the field of HEP, and it may be useful for the advancement of internationalisation within the broader South African HE landscape. Further, HEP in China and South Africa are currently receiving significant consideration, yet limited research nor profound scientific thought exist. This research may provide policy makers with some well-argued information on how China utilise HEI as a transformative force to confront challenges within the knowledge-based economy.

### **3. Research Aim and Questions**

The aim of this paper is to provide the outline of a research methodology for the study of a dynamic and reformative South African HEI framework based on the transformative force (i.e. adjustment of change, learning, shared knowledge, internationalisation, globalisation and institutionalised memory) of HEI in the People's Republic of China. Therefore, this study seeks to answer the overarching question: How can a South African higher education reformative internationalisation framework be developed based on Chinese experiences? Within the limits of the research aim, the accompanying three sub-questions are formulated and will guide the data collection and data analysis process: What are the internationalisation factors in the various reform phases of China's higher education?; How appropriate are the internationalisation factors of China to higher education transformation in South Africa?; and How can China's higher education internationalisation framework be contextualised for South Africa?

### **4. Research Methods and Design**

The research is located within the interpretivist paradigm and imbedded in the epistemological belief that social reality is constructed by the people who participate in it ... and is constructed differently by different individuals (Gall, Borg and Gall 1996:18-19). The interpretivist paradigm was selected to understand a complex education phenomenon, namely to propose a dynamic and reformative HEI framework for South Africa based on the experiences of China.

Mixed methods research is progressively used by scholars, whereas Hesse-Biber (2010) indicated that mix methods is the combination of methods involving the collection, analysis and integration of quantitative and qualitative data in a single or multiphase study. The essential premise of mix methods for this research is that it will allow for a more complete and synergistic usage of data than separate quantitative and qualitative methodology. Further strengths of this methodology include the recognition of various perspectives and paradigms, inclusion of more difficult questions than can be answered by only a quantitative or qualitative study, the need to simplify, contextualise, clarify and comprehend the research problem under investigation, and combining data collection and analysis to breach limitations in utilising one method exclusively.

The research will follow a three-phase approach, combining a multiphase mixed methods design (Figure 1). The preceding design include numerous phases that come together to answer the focal research question and will be addressed through content analysis (Phase I), in-depth interviews (Phase II) and surveys (Phase III). The three-phase approach are discussed in the following sub sections.

#### **4.1 Research Approach of Phase I using Qualitative Content Analysis**

Content analysis, as a conventional qualitative research analysis, will be used to determine the internationalisation factors in the various reform phases of China's HE. Content analysis examines and classifies topics, issues, or themes contained in text, transcript, narrative or discussion. The approach of Phase I is historic-genetic with the intention to investigate the HEI factors of China in a problem-centered way.

The theoretical sampling technique is selected for Phase 1. This implies that when the preliminary data collection and analysis begins to create explanations, expansion of the sample may be recommended and lead to the gathering of subsequent data. Hence, data will be collected until theoretical saturation is reached and no new information in the data associated with the codes, themes or theory is observed (Strauss and Corbin 1998). For this purpose, the grounded theory concept of theoretical saturation as the marker of an adequate sample size will be utilised (Guest, Bunce and Johnson 2006). Sampling in content analysis follows a similar process as in survey research, but as opposed to sampling people from a population, texts are sampled from a corpora. Whereas corpora represents a population of text. In Phase I, the corpora alludes to all the policy documents of China's HE. The sampling units is the corpus, the six selected HE policies (HEP).

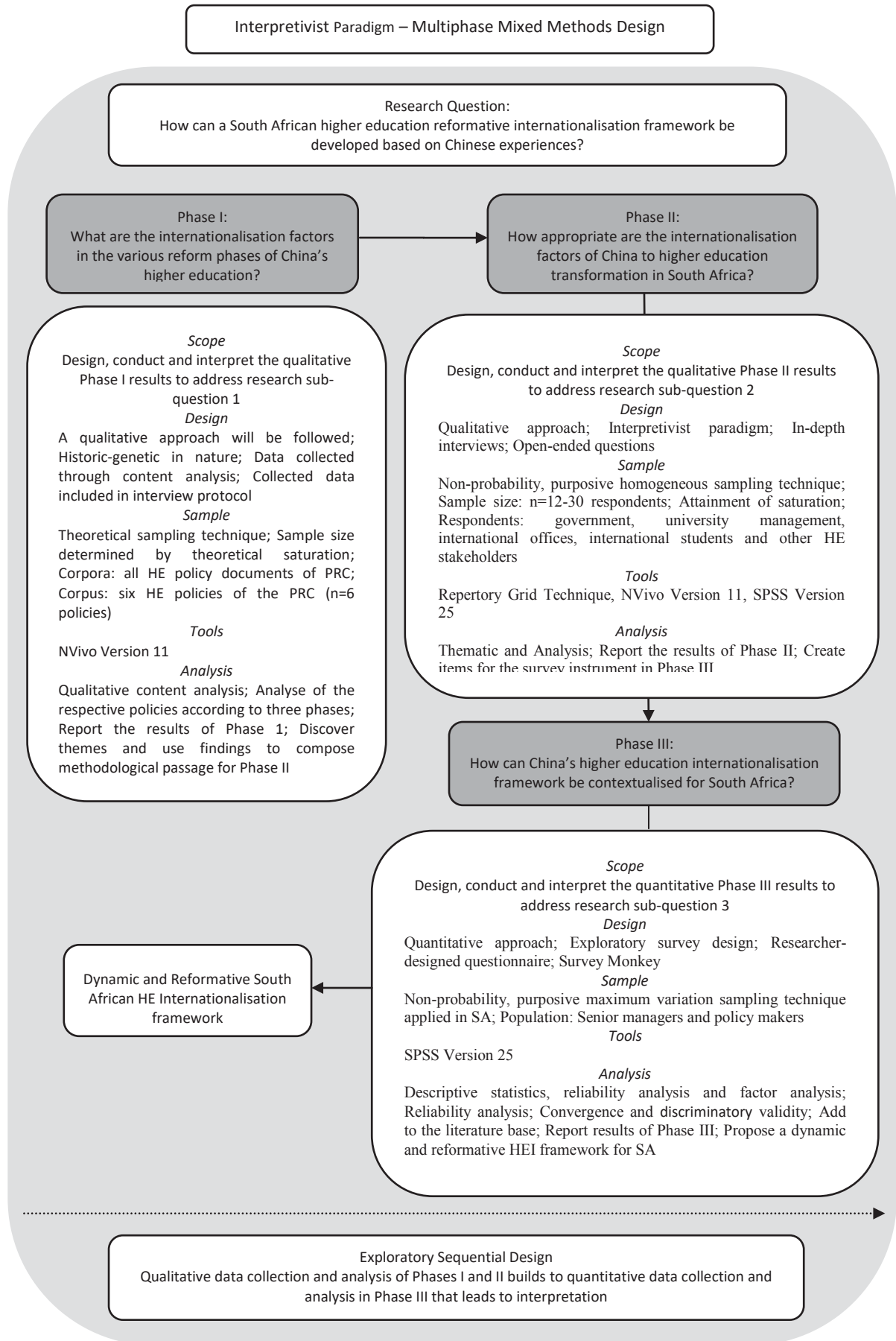


Figure 1: Research design

These HEP, selected for their influence on internationalisation, will be examined from a policy content perspective and organized according to subject classification. During the qualitative analysis, consideration will be given to the exploratory and descriptive nature of the policies. The six national policies include: Chinese Communist Party Central Committee (CCP CC) Decision on Educational System Reform; Outline for Reform and Development of Education in China; Action Plan for Revitalization of Education in the 21st Century; 2003-2007 Action Plan for Revitalization of Education; The National Outline for Mid- and Long-Term Education Planning and Development; and Implementation Measures to Coordinate Development of World-Class Universities and First-Class Disciplines Construction as part of the Thirteen Five Year Plan on Education.

These six national policies on HE incorporate both independent national internationalisation policies, as well as general HE policies that refer to internationalisation. These policies have been selected for analysis for various reasons. Firstly, these policies are all guideline policies, which affected the discourse and development of education in China. Moreover, they are exhaustive policies vis-à-vis all aspects of education governance. The depiction of internationalisation in these policies demonstrates the degree to which the government perceives and is receptive to internationalisation. Lastly, they are milestone policies defining the directions of education development within various timeframes. An examination of these policies issued during the 1980s to 2018 can thus demonstrate the evolving nature of internationalisation over nearly four decades.

Additionally, the proposed investigation will be undertaken at the national policy level. The preceding decision was made for a variety of reasons. Regardless, as numerous studies have indicated, governments still assume a focal role in guiding HE (Beerens 2004). Consistent with Enders (2004:361) HEP reflect and emphasise the specific traditions and conditions of individual countries. Similarly, countries with comparable socio-economic and political conditions have different HEI policies (Graf 2009). Furthermore, conducting the research on national policy level, political commitment is expressed towards HEI.

The policy documents will be analysed using the qualitative content analysis technique. Three sequential stages will be utilised in the analysis of the data. The initial stage of Phase I will only use the first stage of the grounded theory methodology for data analysis, instead of a full grounded theory approach. To achieve the preceding, a core category at a high level of abstraction is pursued by using a progressive coding procedure of the collected data (Punch 1998:205). The coding procedure of grounded theory comprises of three stages, with only the first stage to be utilised in this research. Open-coding, based on the first stage of grounded theory, will be used to search for conceptual articulations and substitutes of internationalisation for instance international, world and global in every policy to shape similar concepts into categories or sub-categories with conceptual names allocated to them (Strauss and Corbin 1998). It will be furthermore be used to determine the internationalisation factors in the various reform phases of China's HE, as opposed to creating a new theory. Accordingly, neither axial nor selective coding will be applied in the analysis of Phase I, whereas theme and pattern recognition will be the foci of Phase I.

In the second stage of Phase I, comparison and differences of the recurrence of the articulations will be undertaken and categorised in relation to the characteristics of internationalisation. During the last stage of Phase I, the contexts in which the articulations are used will be analysed to determine the objectives of HEI and the methods for achieving these objectives. Thus, the core categories central to HEI.

NVivo 11 (Version 11) will be used as qualitative analysis software to administer the research data. Applying this tool will enrich the analysis phase by arranging the different codes and categories quicker, and discovering relationships and connections more effectively.

#### **4.2 Research Approach of Phase II using Qualitative In-Depth Interviews**

The objective of Phase II is to determine the appropriateness of the internationalisation factors of China to HE transformation in South Africa and will follow a qualitative approach framed within the interpretivist paradigm. Distinct experiences and insights is imperative in the development of reality, or probably, multiple realities, and the qualitative method of in-depth interviews is an applicable method for gathering data for Phase II (Denzin 2001).

In-depth interviews are appropriate as it permits open-ended exploration of topics and elicits responses that are couched in the unique words of the respondents (Gall, Borg and Gall 1996:290). In-depth interviews will therefore allow for credible, rich data collection, provide structure to direct discussion and flexibility to the

respondent to provide further information. To ensure the preceding, selected respondents should have knowledge of and experiences in the HE environment (McMillan and Schumacher 2006).

The interview questions will be open-ended questions to provoke information from respondents (Creswell 2007). Purposive homogeneous sampling will be adopted (Denzin and Lincoln 2000) and will focus on one subgroup where all sample members are similar, such as from a particular occupation or level in an organisation (Saunders, Lewis and Thornhill 2012). The goal is to sample respondents that are relevant to the research question. Therefore, only government, university management, international offices, international students and other relevant HE stakeholders will be included in the sample.

The sample size estimation will not be statistically calculated as sampling will be based on extensive and rich data rather than representativeness. The guiding principle in determining the sample size, will be the attainment of saturation. The sample size estimation is grounded on the justification of Galvin (2015), which indicated that saturation is largely achieved after 12 to 30 interviews and will last between 45 to 60 minutes.

An interview schedule will be employed and interviews will be recorded to afford a complete verbal record, transcribed and analysed by extracting critical items from the professional opinion of the interviewees (Gall, Borg and Gall 1996:320).

Data will be gathered as indicated previously by means of in-depth interviews utilising the Repertory Grid Interview Technique (RGT). Thematic analysis (TA), build on the theoretical six-phase approach of Braun and Clarke (2006), will be used to find constructs and construct relationships. The six-phase approach includes familiarisation of data, coding, searching for themes, reviewing themes, defining and naming themes, and writing up. To analyse the indicators of internationalisation, cluster analysis will be applied. NVivo (Version 11) and SPSS (Version 25) will be used for data analysis.

#### **4.3 Research Approach of Phase III using Quantitative Exploratory Survey Design**

A quantitative research method will be employed for Phase III and an exploratory survey research design was selected to contextualise China's HEI framework for South Africa. The exploratory survey will be cautiously planned and organised in design with the goal that the collected data can be statistically inferred on a population and will include the administration of a researcher-designed questionnaire, based on the results of Phase II. Questionnaires are appropriate due to its broad application in economic and management research, guarantee confidentiality, provide information in a brief timeframe, and acquire data about opinions, perceptions, behaviours and attitudes of a specific group in the HEI milieu.

Phase III will use a non-probability, purposive, maximum variation sampling strategy to identify and select respondents. By means of maximum variation sampling the researcher intentionally identify respondents who will include opposing elements to the sample and have an extensive range of characteristics, behaviours, experiences, attributes and situations (Miles and Huberman 1994). It is additionally suitable to manage sample bias. The objective in using maximum variation sampling is to create a reasonable small sample, mirror the diversity of individuals, represent a broad range of perspectives including average to more extreme perspectives and to gain greater insight into the current research phenomenon by viewing it from every angle.

A sample will be selected from a specific population of senior managers and policy makers in the South African HE industry. The questionnaire will be designed using the Internet-based survey creator Survey Monkey to ease distribution of questionnaires as well as its capability to guarantee confidentiality.

SPSS (Version 25) will be used to analyse the survey data. Descriptive statistics, reliability analysis, factor analysis and construct analysis will be performed. Firstly, descriptive statistics will provide basic explanations and will include measurement of frequencies, percentages, averages and standard deviations. Secondly, to confirm scale reliability, Cronbach's Alpha coefficient will be used to measure the reliability or internal consistency of the questionnaire and will be set at the minimum required alpha coefficient of .70 or above (Bann et al. 2003). Followed by factor analysis using the principal components extraction method and Varimax rotation. Lastly, to confirm the presence of construct validity, this research adopted the approach to assess convergent and discriminant validity simultaneously (Cook and Beckman 2006). The purpose of construct validity is to logically analyse and test predicted relationships with other variables that should theoretically be related (convergent validity) or vary independently (discriminant validity). Convergent validity will be assessed

by factor loading, Composite Reliability (CR) and Average Variance Extracted (AVE), whereas discriminant validity will be assessed by chi-square difference test and the average variance extracted analysis.

#### **4.4 Field Journal**

A research journal will be kept to record subjective observations, spontaneous discussions, reflections and body language amid interactions with interview and survey respondents. The field journal will be beneficial in drawing conclusions that cannot solely be obtained through the interviews and questionnaires. Furthermore, the research journal may provide insight into the perceptions of the respondents, which they were not able to articulate verbally during the interview phase.

### **5. Conclusion**

No country has all the solutions for the challenges posed by the 21<sup>st</sup> century, particularly in the HE environment. National conditions including economic, social, political and education realities are too complex to transfer from one country to another. However, views from different countries can propose methods that may prompt potential solutions to existing problems. An interpretation of the functioning of HEI policies can enable countries to observe themselves considering other countries' performances. Through international comparisons, countries may perceive qualities and shortcomings in their own HE frameworks and may evaluate variations in HE practices that are unique or reflect differences observed in other countries.

Governments are carefully considering international comparative policy analysis because it may improve social and economic conditions, and enable governments to organise resources to meet increased HE demands.

Furthermore, South Africa and China are also members of the emerging national economies of Brazil, Russia, India, China and South Africa (BRICS) consortium and share some comparable positions and perspectives towards numerous international issues. Therefore, this research may provide a decision-making base and reference for HEI for both China as well as South Africa. Hence, the exploration of this topic is worth investigating from a global as well as comparative perspective.

In addition to strengthen the existing body of knowledge on HEI, particularly in the domain of practical and specific insights of internationalisation, the outcomes of this research may also be of significant relevance to HE practitioners. Especially to HE practitioners involved in leading change to advise practice, aid those implementing internationalisation activities, offering direction on the elements that advance or limit implementation and reaching internationalisation objectives. Additionally, to universities, the results of this research may improve their internationalisation strategies in realising the expectations of government to expand beyond national interests to become globally competitive, maintain international reputations, and provide relevant education that will contribute to an increased diverse global society.

Literature on HEI demonstrates the prominence of scholarly results measuring international activities, however little emphasis has been placed on theoretical frameworks guiding the internationalisation process within the HE environment. Although research on HEI has gained prominence, limited contextual research of the phenomenon of HEI in the South African context exists. Hence, the innovative nature of this research exists in the emphasis on developing a dynamic and reformative framework for HEI for decision-makers in South Africa. This research may also develop a better understanding of comparatively position countries, such as China, with similar attributes, circumstances and challenges of HE reform. This research will additionally contribute to the field of multiphase mixed methods studies by indicating the value of using both quantitative and qualitative approaches in investigating HEI. It furthermore may encourage future researchers to use multiple methodologies in their research.

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# Leading Reflective Practice-Based Learning Trajectories in Order to Develop Organizational Improvisational Skills

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**Abstract:** This paper suggests that reflective practice-based learning, as a learning philosophy, can support the development of organizational improvisational skills in an educational setting in the shape of a course in management and development in public sector organizations. In doing so the paper describes how the role of the educator shifts from that of a "teacher" to that of a "learning process facilitator", hereby creating new expectations in relation to teaching and developing professionals. The findings are concerned with a characterization of the "learning process facilitator", imagined as the individual, who facilitates reflective practice-based learning processes through different intervention types and through balancing scaffolding and disturbance.

**Keywords:** Leadership, experimental learning trajectories, reflective practice-based learning, organizational improvisation

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## 1. Introduction

This paper focuses on the question of how reflective practice-based learning can support the development of organizational improvisational skills through learning processes in an educational setting. In doing so it becomes imperative to explore and describe how the role of the educator shifts from that of a "teacher" to that of a "learning process facilitator". Furthermore, it becomes necessary to discuss how one might understand the character and challenges of the learning process facilitator, in order to qualify her leadership and management of reflective practice-based learning (RPL) processes that seek to integrate theory and praxis.

In the paper, I refer to an example of an experimental design of a reflective practice-based process from an educational setting in a Danish university college. In designing and facilitating this process of the course in question, my colleagues and I have drawn on the reflective practice-based learning philosophy (Hereafter RPL), principles of action research methodology, theory of learning trajectories, skill acquisition, and organizational theory on improvisation and sensemaking.

In the following I present the most central concepts for the argument of the paper. The argument revolves around on the assertion that the above-mentioned inspiration is helpful in order to plan and lead reflective-based learning processes, because it holds potential for integration of theory and practice on organizational development. Moreover, it furthers development of participants' understanding of agile organizations and skills to part take in organizational improvisation.

Firstly, I present the RPL philosophy and its grounding in classical pragmatism and theory of reflection. Secondly, I introduce the concept of learning trajectories in connection with the principles of action research and theory on skill acquisition. Thirdly, I discuss how the planning and facilitating of these RPL trajectories demand certain action and pose certain challenges for the learning process facilitator.

## 2. The Reflective Practice-based Learning Philosophy (RPL)

Reflective practice-based learning (RPL) is a term coined by University College of Northern Jutland in 2013. The term originated as a branding concept to market the university college's education as an alternative to similar ones at traditional universities. Over the past 5 years the term has undergone scrutiny with regards to its implementation in learning processes and its strategic anchoring in the organization. Here, it has been described and discussed by both researchers and practitioners (Knudsen & Haastrup 2016).

Despite scrutiny, the term continues to warrant a strong research foundation for creating a cohesive learning philosophy. We seek to develop and apply the RPL philosophy as an anchor for future practice in educational learning processes and as a bedrock for strategic development of University College practices in general.

In order to apply the principles of the RPL philosophy to the selected example and the central points in this paper, it becomes imperative to explicate two scientific groundings on which practitioners of the philosophy

seem to generally agree. To begin with, there seems to be agreement on the anchoring of RPL in classical pragmatism (James 1907, 1908, Dewey 1910) with regard to the conceptualization of experience-based learning. This article in part serves as a step on the way towards creating such a bedrock.

### 2.1 Scientific grounding in classical pragmatism and reflection

In defining RPL it is especially in the definition of learning as a coupling of theory and praxis, that inspiration from classical pragmatism becomes pertinent. Specifically, the idea of learning processes as streams driven by experience in the shape of practice with new realizations of meaning in praxis (James 1907, 1908, Dewey 1910). In this paper, I furthermore pose that realizations of new meaning are conducive to conceptualization of vigor for participants, and that these are caused by breakdowns and subsequent restoring of meaningful cohesion through sensemaking (Weick 1995).

In other words; the agenda of the RPL philosophy is to increase participant’s capacity to conceptualize and enact (Weick 1995) meaningful practices. The example presented below relates to managing and developing public sector organizations in the way that it explicates a approach for developing skills for improvisational reflective practice. The increased vigor of participants appears as an increased ability to see through and solve complex practical problems. This ability grows on the basis of participants learning as sensemaking which relies on both theoretical, abstract principles and experience with concrete extracts of the praxis, that these principles apply to (Dreyfus & Dreyfus 1980, p. 5). In the example described in the model below, these extracts of praxis may take the shape of problems, dilemmas or assignments that stem from the praxis, which participants’ learning process relate to. The coupling of pragmatism and Dreyfus & Dreyfus’ principles of skill acquisition is to be found in their overlapping ideals for what learning processes are intended to produce. Both approaches to learning diverge from a more Piagetian ideal, where the accomplished learner attains an ability to express a higher degree of abstraction about the subject of the learning process. Instead, they describe the increased ability to relate and integrate abstract principles with concrete experience with regards to practical problem solving as the main criteria for a successful learning process.

The RPL philosophy applies to experience-, or practice-based, sensemaking processes through difference, and contain different types of reflection. In this characterization, we draw on Shöns distinction between “reflection-in-action” and “reflection-on-action” (2001). In the figure below these two types of reflection are presented as “mediate” and “immediate” reflection, and they function as the horizontal pivot of the coordinate system. On the vertical line, we distinguish between “inward” and “outward” reflection. These categories are further described below the figure and all serve as a means to foster the development of professionals in the shape of reflective practitioners (Shön 2001).

The figure below illustrates how we draw on inspiration from pragmatism and reflection. Below the illustration, I have explained four different types of activity for the students that can be characterized through the coordinate systems continuums. The types of activity all feature in the learning process that serves as an empirical example of RPL learning trajectories in the last part of the paper.

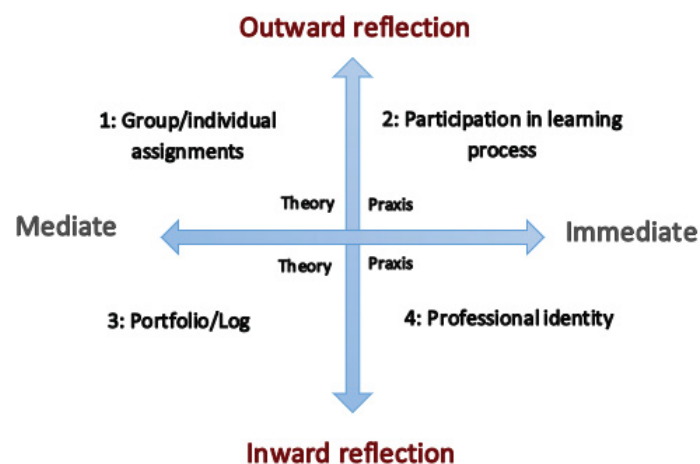


Figure 1. After Kjærgaard, Jensen & Valbak-Andersen 2018

The first quadrant illustrates participant activity that can be characterized as *mediate outward reflection*. In this practice, participants direct attention to explicating their making sense of a practice that they have gained a new and enriched understanding of through the learning process. Their mediation signifies a distance to the subject of their reflection, which is expressed through the fact that their mediation takes the shape of writing from a position of retrospection, directed at how their actions affect the praxis, they have engaged in. Furthermore, the writing requires that participants take a position on how their sensemaking increases their sense of their own or others' actionability with regard to the segment of the praxis that constitutes their subject of reflection. The coupling of theory and praxis is characterized by an agenda to increase understanding and actionability in relation to something in the participants' context.

The second quadrant illustrates participant activity that can be characterized as *immediate outward reflection*. In this practice, participants reflect out loud during sessions of lecturing, class discussion or through conversations with fellow students or the learning process facilitator. This reflection is instant and directed at something outside of the participant herself, which the participant has discovered. It could be something that has been presented in the learning process, and which either makes sense to the participant or breaks with an existing understanding. The coupling of theory and praxis is characterized by an agenda to increase understanding and actionability in relation to something in participant's context. For example regarding something that can be done to solve a problem or frame praxis in a new and more helpful way

The third quadrant illustrates participant activity that can be characterized as *mediate inward reflection*. In this practice, participants describe their reflection upon processes that they have engaged in, and which have affected them in some way. Participants mediate this reflection at a distance from the experience that they are describing, and they do so through an explicitly retrospective writing process, where they can work on the text until they feel that it corresponds to the emergent sense that they are achieving. Their mediation signifies a distance to the subject of their reflection which is expressed through the fact that their mediation (like the activity in quadrant 1) takes the shape of writing from a position of retrospection, directed at how their actions and approach affect the praxis, they have engaged in and how this engagement in praxis affects them. The coupling of theory and praxis is characterized by an agenda to increase understanding and actionability in relation to something in participant's own relation to the subject of their reflection.

The fourth quadrant illustrates participant activity that can be characterized as *immediate inward reflection*. In this practice, participants develop their understanding of themselves as professionals in relation to the practice that constitutes the subject of their reflection. In contrast to the three previous categories of reflection, this type of reflection is not always explicit, but may manifest as subtle shifts in identity, behavior or positioning in concrete situations. It may occur in connection with teaching sessions, group work or in their approach to input from practice. When participants more explicitly express this reflection, it may come across as an increased attention to their role in the context that they are engaged in, as assumptions about this praxis or as an ability to synthesize experience from one segment of practice with another, or between theory and practice. This synthesize may appear as an ability to identify significant parameters or decisions in the relevant praxis or as an ability to assess importance or action. Dreyfus and Dreyfus refer to this beginning ability as development of *holistic distinction and association*, which is indicative of a high level of skill acquisition (1991).

According to Schön, this reflection typically arises instantly and is directed at something in participant's own relation to the subject of their reflection. The reflection may pertain to an experience that makes sense to the participant or breaks with an existing understanding. The coupling of theory and praxis is characterized by an agenda to increase understanding and actionability in relation to the participants' development as a reflective professional practitioner.

### 3. Learning trajectories of skill acquisition

In operationalizing the RPL philosophy, we conceive of learning processes as "learning trajectories" (Lobato & Walter 2017), which aim to increase participants' level of knowledge as well as skills and competence. These three goals are connected in the way that knowledge *precedes* skills, and that competence can be seen as desired *level* of skill acquisition. By extension, the understanding of skills and the acquisition of these through transition from lower to higher levels of improvisation becomes paramount in planning and leading RPL processes.

The Dreyfus and Dreyfus model identifies the beginner (novice) as able to identify non-situational features of the practice, that she is in the commencement of learning. She will need to be extensively instructed and monitored while attempting to perform the skills in question, and she will largely be unable to practice the skill(s) in a cohesive flow and adequate tempo as she is constantly required to recall and consider rules and analyse how to apply them (Dreyfus 2004, s. 177). A “competent performer” can identify “*situational components*” and formulate “*principles dictating action*” or “*guidelines*” for the praxis in which she is engaged, however she is not yet able to segment “*aspects*” of this praxis with regards to significance. This segmenting according to significance or relevance only develops when the participant becomes “proficient”. The proficient participant again uses memorized “*maxims*” in order to plan action, and is hereby distinguished from the expert, who begins to rely on “*intuition*” in order to decide on appropriate action. The expert’s intuitive decision-making is more efficient than that of the previous stages, as the participant recognizes situations from previous experience and sense that situations calls for certain action without them having to spend time analyzing every situation in relation to rules or maxims. Rather their decision on appropriate action is a result of them associating certain action with certain situations. Often this intuitive decision-making is reduced in quality or efficiency if the participant begins to consciously reflect on what they are doing. In their conception of “*mastery*”, Dreyfus and Dreyfus leave room for episodes, where the expert completely ceases to pay attention to their actions and thereby indicate that this level of skill acquisition is characterized by being non-reflective (1980, p. 8-15)

#### 4. An Action Research Inspired Improvisation Design for Learning Trajectories

In planning the general course learning trajectory, I have also been very inspired by principles of action research as an approach to operationalize the RPL philosophy. Specifically, I draw on inspiration from the methodology to characterize learning processes as change processes, and the “teacher” as a “change facilitator” (Reason & Wicks 2009, Levin 2012, Cook 2007). We continue to translate this into our characterization of the “learning process facilitator”.

In understanding learning processes as change processes, I find that principles from organizational theory of improvisation (Weick 1995, Barrett 2014, Peplowski 1998) can be advantageous as they can be applied to the RPL process in two manners. One the one hand, principles of organizational improvisation can be applied to the learning process of participants, as a paedagogical-didactic strategy. On the other hand, the principles can be used by participants as a theoretical framework for analyzing public sector organizations, and thereby as a knowledge-foundation for participants skills for development and management of public sector organizations.

In designing the course learning trajectory, we thus open up our didactic-paedagogical considerations to theory on organizational change and the processes that foster and hamper change in human collectives.

“*context-free features*” (Dreyfus & Dreyfus 1980, p. 7) “*non-situational*” beginner “*rules*” novices need “*monitoring, either by self-observation or instructional feedback*”. During the course it becomes the responsibility of the learning process facilitators to supply interventions that form “*minimal structures*” (Weick 1995, Barrett 2014), in order to allow participants to experiment with improvisation that is more or less scaffolded.

#### 5. Leading Learning Trajectories: Balancing disturbance and scaffolding

In planning and facilitating learning trajectories for participants through the RPL philosophy, we describe the facilitators’ role as one shifting between and balancing two types of actions or interventions. Firstly, the facilitator must stimulate participants in order to activate their thinking. This stimulation takes the shape of an interruption of the existing sensemaking with participants (individually and socially) (Weick 1995), encouraging them to step out of the stream of experience (James 1907) and direct their attention to restoring their grasp on the praxis that serves at the subject of their reflection. We refer to this intervention as “*disturbance*”.

Secondly, the facilitator must ensure that the cognitive dissonance (Weick 1995) does not become so salient that participants are unable to advance their acquisition of the central skills in the learning processes, or even so they might regress to a former stage. In this ensuring the facilitator might draw on the concept of “*scaffolding*” Scaffolding is a term that is often attributed to the learning theory of Lev Vygotsky (1926), who described the concept as a means to manage learning processes on the basis of his central concept of

individual's Zone of Proximal Development. In an educational setting scaffolding can take the shape of explaining, illustrating, narrating or co-reflecting in order to assist participants restoring of their sense of cohesion as well as their anticipation of their own ability to re-attain this sense of cohesion ("Self-efficacy") (Antonovsky 1987). The principle of proximal development is illustrated in the model below, which is a recount of Vygotsky's argument

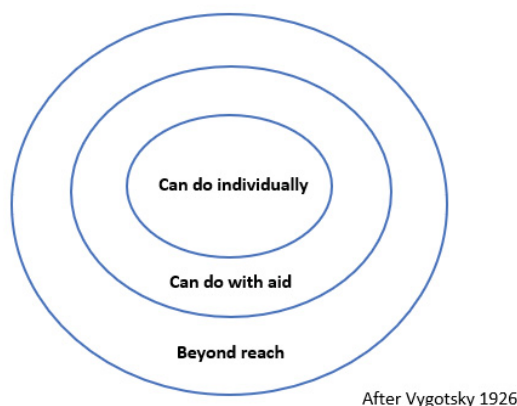


Figure 2: After Vygotsky 1926

In essence, the model above work as follows; in the inner zone, the person is able to learn or develop new understanding without the help of others. In the penultimate next zone, the individual can learn something if aided by others. This aid "scaffolds" individuals learning and enables a bridging between the individual's existing ability to learn and that, which is too difficult to learn of her own. The third zone depicts a condition, where what needs to be understood is beyond the reach of the individual, even when aided or scaffolded by what Vygotsky refers to as knowledgeable others, technology or tools (1926). In our use of Vygotsky's principles knowledgeable others are exemplified by the learning process facilitator, praxis partners and theorists that are introduced during the process of the course. Technologies are theories and concepts, and tools represent scaffolding in the shape of strategies or methods that are presented to participants during the course.

The mirror concept for "scaffolding" is "disturbance", which is a term inspired by systems theory. It entails an understanding of how bringing a temporary imbalance to systems can be conducive to development (see eg. traditional contributions to organizational thinking such as Varela & Maturana 1974, Bateson 1972, Barrett 2012, Luhmann 2013, or more recent contributions on disruption such as Lundgaard & Rosenstand 2018, Christensen & Bower 1995). In this paper, I especially draw on Weick's sensemaking theory in order to operationalize key pragmatic principles of the RPL philosophy with regards to activate participants' thinking (and thereby their system of cognition) (1995).

Scaffolding and disturbance function as dichotomic intervention practice between which the learning process facilitator must constantly seek to find a balance that will ensure a constructive learning trajectory for participants in the course. As mentioned earlier one of the challenges is that the learning process facilitator must both consider participants individual learning trajectories and gain a sense of how the general learning trajectory of the group of participants function. Decisions to increase or decrease the level of scaffolding or disturbance may therefore be made either to accommodate individual participants or the collective group.

This decision to decrease or increase levels demand that the learning trajectory facilitator be adept to "(...) identify at each stage what capacities the performer has acquired and which more sophisticated capacity he is then in a position to attain" (Dreyfus & Dreyfus 1980, p. 6).

Where the Dreyfus and Dreyfus model clearly deals with the dynamic development of skills in individuals, its linear character fall short of encompassing learning processes in groups. In the example recited below we work with groups of up to 35-40 participants (students), and these are all both individually and socially engaged in the learning processes. This calls for theoretical input that can help to describe how the collective capacity of the group contributes to the needs for facilitation. This social dynamic process is explored further in (Valbak-Andersen 2018) but will not be further elaborated on here. Instead, focus is on how the learning process

facilitator can stimulate development of skills with participants in the learning process through planning and facilitating through an RPL philosophy. Suffice to say that the skill acquisition of participants will not be synchronous but distinguished with regard to the tempo with which participants move from one stage to the next. One of the major challenges for the learning process facilitator is to acquire a sense of both the individual participants' skill level as well as the general average of the group so the skill acquisition process adequately sophisticated in order to ensure gradual advancement and avoid impediment or regression (Dreyfus & Dreyfus 1980, s. 16).

In the following I have selected two examples of learning trajectories for a group of participants in a 3<sup>rd</sup> semester educational setting. Participants take part in a course on managing and developing public sector organizations as a part of their bachelor in Public Administration at University College of Northern Jutland, Denmark. At this stage, participants in the learning process have just begun the 3<sup>rd</sup> semester of the bachelor program.

### **5.1 Planning the general learning trajectory process**

The selected example (see 5.2.1.) represent a general perspective on the learning process of the course and recount how my colleagues and I (therefore "we") have designed the overall learning trajectory process on the basis of action research methodology and the RPL philosophy.

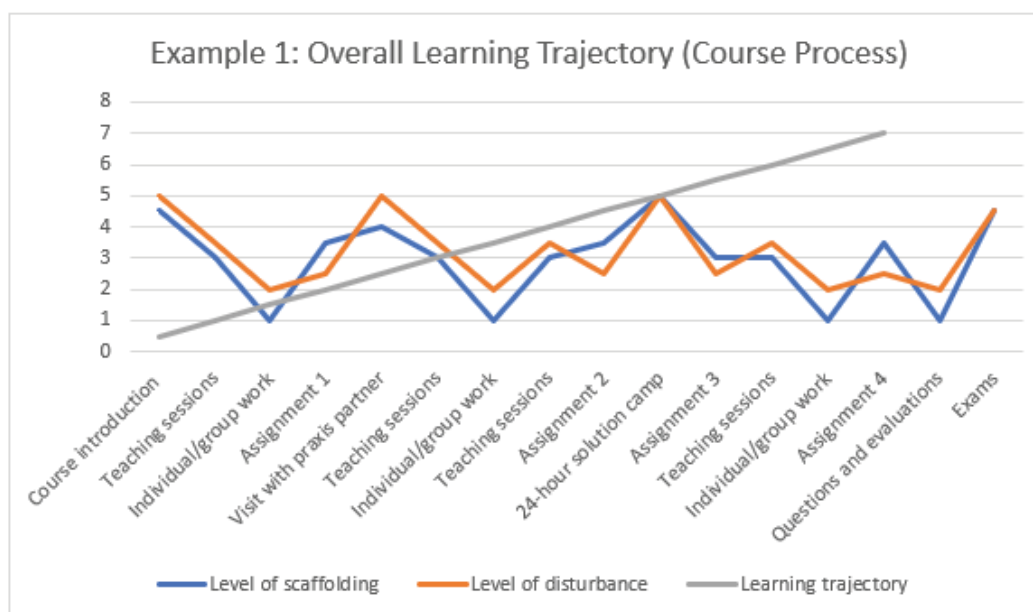
In the example, I focus on how the learning process facilitators can activate the dichotomic intervention types - disturbance and scaffolding - in order to underpin participants learning trajectories as a process of fusing abstract principles (theory) and concrete experience.

The general agenda of redesigning the general learning trajectory for the course in management and development of public sector organizations stems from experience with former courses' learning outcome. At the time of the re-design we had received feedback from students who found the course theoretically overwhelming and in-cohesive, and our experiences with participants' performance at exams were less than satisfactory. The course is built on three types of learning goals; knowledge, skills and competence, which are to be understood in a progressive order, but in fact we struggled to even ensure a sufficient level of knowledge with participants, regarding management and development of public sector organizations.

On top of these evaluations, we realized also, that we struggled to argue as to how we had designed and facilitated the course in accordance with RPL. Mostly this was a challenge because we had primarily planned in accordance with a more behavioristic teaching philosophy that mimicked our former practice as lecturers at the university. Even though we had drawn extensively on cases in the lectures, and left time for group work on these cases, we continued to position ourselves as "teachers" and generally (around 90% of the time) acted as experts lecturing on how to understand management and development of public sector organizations on the basis of a distanced recount of others' experience. The RPL philosophy forces us to reconsider how we could position ourselves in a more conducive manner with regards to supporting participants' acquisition of skills.

The learning trajectory for the students may be illustrated as below

In the learning process we have chosen a variety of intervention types. All have the agenda to either scaffold or disturb participants' learning trajectories through creating reflection concerning the skills in question. As is illustrated in figure 1 this reflection may take the one of four reflection types. Below I have selected a few of these intervention types in order to categorize them as examples of different types of reflection and the level of scaffolding or disturbance.



**Figure 3:** Overall learning trajectory (course process)

#### 5.1.1 Intervention type 1: Course introduction

This intervention type both contains a high degree of scaffolding and disturbance. The scaffolding manifests as our (learning process facilitators') narrating the course to participants, including legislative or organizational decisions which decrease the degree of cognitive dissonance with participants because they enhance minimal structures and reduce complexity. Disturbance manifests with regard to the fact that we have built the entire course on the current needs for change in a selected partner praxis. This is presented at the course introduction by us and by representatives from this praxis. In addition, participants are told that they will be required to deliver an idea of some kind of activity that will help our partner praxis to meet their needs for change, as well as a strategy for implementation in the partner praxis. At this stage we activate their thinking by increasing the level of cognitive dissonance, and this activation results in an immediate outward reflection, which is mainly characterized by knowledge from praxis, as participants in the here and now and with regard to how they might act in solving this problem.

#### 5.1.2 Intervention type 2: Teaching sessions

This intervention type contains a medium level of both scaffolding and disturbance. The scaffolding manifests as framing and leading the teaching session, where we have selected a segment for participants' learning. This segment is known to them ahead of time and so it poses a rather small degree of disturbance for participants.

Disturbance may manifest if the presented segment does not appear clear or if it differs markedly from participants' existing understanding. In the teaching sessions we activate participants' thinking by stimulating an immediate outward reflection that may resemble the one mentioned in the course introduction.

#### 5.1.3 Intervention type 4: Assignments

This intervention type contains a rather high degree of scaffolding and a rather low degree of disturbance. The scaffolding manifests as the relatively strict communication of what and how participants may work with a segmented part of the learning that they need to acquire in the course. At this stage we activate participants' thinking by giving them an opportunity to organize their newly acquired skills in a minimal structure and thereby fixate and emphasize the learning outcome so far. This activation stimulates mediate outward reflection and primarily entails a focus on theory.

#### 5.1.4 Intervention type 5: 24-hour solution camp

This intervention type contains a very high degree of both scaffolding and disturbance. The idea for the solution camp comes from research in creative processes (Ullested et al. 2010), and we train participants as facilitators using a very strict and detailed camp guide. Disturbance manifests especially because we force a shift in position for 3<sup>rd</sup> semester students from participants to facilitators, as they are bound to facilitate for 1<sup>st</sup>

semester students. This ensures an enacting expertise by putting them in a position where we increase the structural and personal power (Foghsgaard & Elmholdt, 2014, s. 28) of 3<sup>rd</sup> semester participants, because we place them in a position as facilitators with responsibility for the learning and production process of 1<sup>st</sup> semester students. In this positioning the learning trajectory for the 3<sup>rd</sup> semester students may be illustrated as below. The activation stimulates an immediate inward reflection, as participants must focus on their own praxis in order to solve the problem of facilitating.

## 6. Conclusion

In the sense described above scaffolding may be used both proactively and reactively by the facilitator. In the proactive version, the facilitators plan the learning process, and thereby structure the conditions for participants' skill acquisitions.

Scaffolding and disturbance function as a further parameter for characterizing how the RPL philosophy may be operationalized in learning processes. Overall the ideal balance between scaffolding and disturbance would be pictured as below

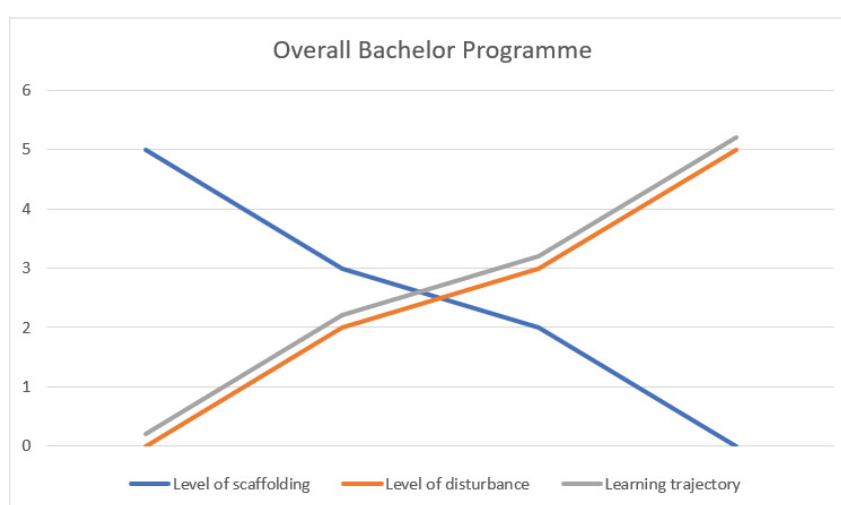


Figure 5: Overall bachelor programme

In the design we rest our argument on the Dreyfus & Dreyfus model of skill acquisition, and the point that rules, guidelines and maxims become less necessary when participants develop their level of competence. Accordingly, it becomes important to supply appropriate disturbance to participants in order to ensure, that they register information and activate their thinking, so the learning trajectory continues to develop.

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# Action! Methods to Develop Entrepreneurship

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**Abstract:** This systematic literature review conference proceeding propose an innovative action research methodology to develop student entrepreneurs' inner-propensities en route to future work-readiness. The research aim is to develop, implement, monitor and investigate a systemic action learning and action research (SALAR) methodology, through the lens of Theory U. The SALAR methodology is given the name SHAPE, which stands for Shifting Hope, Activating Potential Entrepreneurship. Research objectives modulated and changed over time where this conference proceeding present findings on four key objectives. The research findings contribute to new knowledge through a) proposing a SALAR methodology to develop entrepreneurship, b) recommending an action-model to apply the combination of SALAR and Theory U to develop Individual Entrepreneurial Orientation and Entrepreneurial Self-Efficacy and c) identification of systemic barriers to youth entrepreneurship.

**Keywords:** Systemic Action Learning and Action Research; Learning-by-Doing; Action Research; Theory U

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## 1. Introduction

This systematic literature review conference proceeding will focus primarily on research methodology that was conducted through developing, implementing, monitoring and investigating a systemic action learning and action research (SALAR) project during the twelve-month period October 2013 to October 2014, and repeated from October 2016 to November 2017. The SALAR methodology, was given the name SHAPE, which stands for Shifting Hope, Activating Potential Entrepreneurship (van der Westhuizen and Krieger, 2018). This name was used as the research project name.

Theoria" and "Praxis" are Greek philosophical terms introduced by Aristotle. Etymologically, theoria implies "to look, contemplate or intellectually see" and are used in English for the term "theory", and praxis implies action or doing of individuals, which is the root of the words "practice" or "practical" (Bernstein, 2011). In the interrelationship between theoria and praxis, a baseline theoretical investigation was performed after which the praxis unfolded. As the praxis unfolded, it informed further theoria of this research – meaning that in this research, groundwork literature review was done before the systemic action learning and action research methodology was implemented. However, as the SALAR progressed, further theoretical relationships emerged which were only matched after the research took place. The practitioner-researcher therefore followed parallel processes of building the theory as the praxis emerged.

Building on Theory U (Scharmer and Kaufer, 2013), van der Westhuizen's model to enhance entrepreneurship for Student Entrepreneurs and their intermediaries (2016), Zuber-Skerritt's (2002) model for an action learning and action research project, as well as the external influences of the systemic levels, the practitioner proposed a systemic action learning action research project to investigate whether the conceptual framework of Theory U might develop aspects of Individual Entrepreneurial Orientation on the part of Student Entrepreneurs should they receive not only support from role-players on systemic levels, but also be inspired by other individuals. The project needed to be named and the practitioner invented the acronym SHAPE (Shifting Hope, Activating Potential Entrepreneurship) as an encompassing designation that embodies the research aim and objectives.

## 2. Overarching Shape Research Aim and Questions

Developing and applying the SALAR methodology is in itself also the primary aim and objective of the SHAPE research project and giving count on this new methodology is the aim for the conference proceeding. Theory U (See Figure 4) was used as a) research methodology, b) theoretical framework and c) social technology, which was applied for the action systemic action learning action research.

In the light of South Africa's high youth unemployment rate 62% in 2018 (Herrington and Kew) the research problem centers around finding new and innovative ways to develop youth entrepreneurship. The SHAPE project was created to address this need. D'Souza, McCormack, Taghian, Chu, Sullivan-Mort and Ahmed (2019) emphasise the importance of education and training to align itself towards solving sustainability issues

of our world, where youth unemployment in developing nations is a very big problem. . Influence of sustainability scholarship on competencies—an empirical evidence.

The research aim of the project shifted and developed over time and as the Systemic Action Learning and Action Research cycles unfolded over time. The research objectives below were formulated in retrospective of the research project and with specific focus on this conference, because the SALAR methodology brought forward a whole new scope of focus. The main aim was to use and apply Scharmer's Theory U as a lens to develop various aspects of student entrepreneurship.

The research questions to be investigated by the larger SALAR project are:

1. What correlation exists between factors of Theory U and factors of Individual Entrepreneurial Orientation?
2. How does applying factors of Theory U develop Student Entrepreneurs' Individual Entrepreneurial Orientation?
3. How does applying factors of Theory U develop Student Entrepreneurs' Entrepreneurial Self-Efficacy?
4. What barriers to youth entrepreneurship do Student Entrepreneurs experience whilst participating in a Systemic action learning and action research programme to develop entrepreneurship?

The four research questions above were each tackled through an individual set of investigations. Research Questions 1-3 were allocated to different PhD students as part of investigations for their thesis. Research question 4 was allocated to a Masters of Commerce student who investigated this question in depth. All four research questions were investigated to great depth that the research questions as set out above, were each reformulated to become a research aim to the allocated student investigator. From this aim, new and more in depth research objectives were formulated, each with its own research questions. In essence, systematic literature review conference proceeding can be written on each of the four research questions as each was approached by a different investigator, all linked to their supervisor/ project grant holder.

The research questions all relate to the five different processes of the Theory U cycle as separate cycles, which guided the programme and project flow of SHAPE. However, the parallel process of praxis in relation to theoria informed the practitioner-researcher that the stages of Theory U are not linear processes and cannot be presented as isolated processes.

The research questions, objectives and goals were aligned with the chosen methodology after the empirical research has been conducted and not the other way around. According to Pillay (2014), matching the SALAR processes of the research methodology with the phases of the U-processes not only validates Scharmer's work, but also indicates the SALAR potential in refining the social change process. Further, later scholars who published on Theory U and its processes (only after the SALAR of this research took place), stated that they did not think Scharmer meant the U-processes to be seen as separate linear movements (Nicolaidis and McCullum, 2013).

### **3. Research Methodology – A Systematic Literature Review**

Remenyi (1995) probes that a research-practitioner should consider at least three major philosophical questions which are: "why research? what to research? and how to research?" These questions are addressed through the outset of the SHAPE SALAR method. The focus of this conference proceeding is research methodology and therefore the focus in writing up this proceeding emphasise the methodology of SHAPE itself. Therefore, describing SHAPE's SALAR method serves as a systematic literature review.

In measuring the construct under investigation a mixed-method approach was chosen both to enable test-retest comparisons and to arrive at an understanding, at the required depth and detail, of potential transformations resulting from the programme.

This research used a structured online questionnaire to collect quantitative data from participants. Student Entrepreneurs were asked to write reflections online on the project website and these reflections were used to gather qualitative data.

“Mixed methods research endorses use of multiple paradigms rather than the typical association of certain paradigms for quantitative researchers and others for qualitative researchers. It also encourages the researcher to think about a paradigm that might encompass all of quantitative and qualitative research” (Cresswell, 2013).

Despite its value, conducting mixed methods research has its challenges. The process of collecting and analysing both quantitative as well as qualitative data is time consuming and research procedures might be complex to execute and present. However, the value of mixed methods research seems to outweigh the potential challenges associated with this approach (Cresswell, 2013).

The next subsections give a brief description of the analyses performed, respectively, for the qualitative and quantitative components. The presentation of findings conference proceeding will then convey the dual approach to analysing and presenting the findings of this systemic action research.

#### 4. Systemic Action Learning Action Research

The Zuber-Skerritt (2002) model presented a framework and phases of an Action Learning Action Research (ALAR) project. Van der Westhuizen’s model (Figure 3) indicated in turn that to become more entrepreneurial a student entrepreneur needs the support of various intermediaries on various systemic levels. Weinberg (2-15) indicated that the entrepreneurial mindset, and specifically Individual Entrepreneurial Orientation and Entrepreneurial Self-Efficacy, are influenced by a nexus of systemic levels. This led to an integration of Zuber-Skerritt’s ALAR methodology with the systemic approach to developing youth entrepreneurship as suggested by van der Westhuizen (2016).

The research methodology for this study builds on the Zuber-Skerritt ALAR model to develop a systemic action learning action research (SALAR) project. The focus is on the student entrepreneur, supported by an ecosystem of intermediaries as indicated in van der Westhuizen’s model (as per conference presentation visual aid). This SALAR methodology was specifically initiated, developed, implemented and investigated for the purpose of this SHAPE project. The SALAR was subsequently named SHAPE and the acronym has specific symbolic reference to the research aim and objectives.

Systemic action research is defined by (Schweikert et al., 2013) as “interactive processes between local stakeholders and the researcher that enable individuals involved to bring diverse knowledge and a dialogical process to a problem or challenge... that allows the researcher to observe and act upon dynamics at the systemic level.”

Inclusion of Theory U as a conceptual framework in the model for systemic ALAR also puts focus on the support given to programme participants by instructors, peers and administrative personnel (Schweikert et al., 2013).

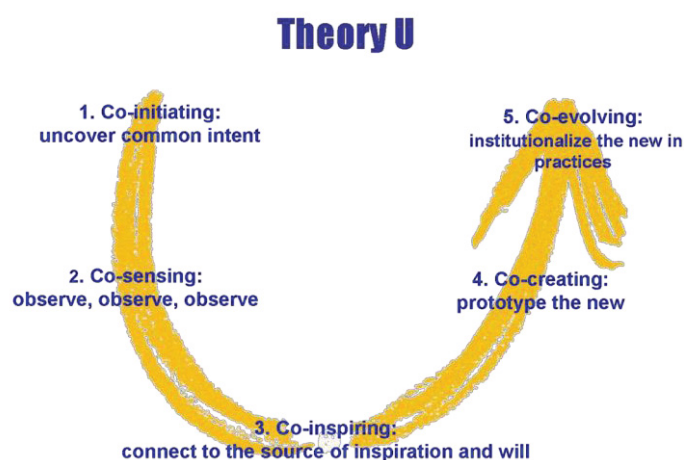


Figure 1: Five basic phases of Theory U (Scharmer & Kaufer, 2013)

## 5. Research design

The research design will be illustrated through the following:

- SHAPE Project cycles
- SHAPE Project phases
- Systemic action learning action research role-players

### 5.1 Systematically Representation Of The Salar Research Methodology

The eleven-cycle structure of the SHAPE project components included the following cycles:

1. Problem definition and Needs Analysis.
2. Pilot. Quantitative intervention, pilot study IEO survey.
3. Forming formal Business Friendships and operational setup.
4. Start-Up workshops. Pre-Shape quantitative intervention and first IEO survey.
5. Project work. During Shape qualitative intervention, first reflective writing.
  - Classroom facilitation.
  - Mentorship provided by local municipality to student entrepreneurs.
  - Mentorship provided by Chamber of Commerce to student entrepreneurs.
  - Mentorship provided by provincial government unit: Regional and Local Economic Development.
6. Midway workshops.
  - Guest Speaker.
  - Field Trip to incubators.
7. Project Work (continues). During-Shape quantitative intervention second IEO survey and first ESE survey.
  - Classroom Facilitation.
  - Mentorship provided by local municipality to student entrepreneurs.
  - Mentorship provided by Chamber of Commerce to student entrepreneurs
8. Concluding workshop. Post-Shape quantitative intervention: third IEO survey and second ESE survey.
  - Meet Your Business Friend Day.
9. Preparing for presentations and publications. Post-Shape qualitative intervention: second reflective writing.
10. Presentation and Celebration.
11. New Workshop Cycle started.

The SHAPE research methodology project phases are:

1. Pre-Shape (cycles one to four)
2. During-Shape (cycles five to seven)
3. Post-Shape (cycles eight to eleven)

The detailed roll-out sequence of the eleven-cycle structure serve as research method for the three phases: Pre-Shape, During-Shape and Post-Shape. Cycles one to four took place during the Pre-Shape Phase and relate to Theory U aspects of Co-Initiating, Co-Sensing and Co-Inspiring. The During-Shape project phase, included cycles five to seven and relate to all Theory U aspects. The Post-Shape project phase included cycles eight to eleven and relate to Theory U aspects of Co-Inspiring, Co-Creating and Co-Evolving.

## 6. Research Paradigms that Informed Research Design

The principal research paradigm and ontology is nondualism. Cresswell (2013) highlighting the way that a mixed-methods research approach encourages the use of multiple paradigms rather than typical and traditional association of certain paradigms to qualitative and quantitative methods. This research further draws on two approaches to conducting research which are the positivist approach and the phenomenological approach.

The positivist approach refers chiefly to quantitative research in which reality is perceived as objective – where the true state of affairs exists “out there” as universal laws and independently of the researcher. The practitioner-researcher is therefore tasked to investigate, through systematic scientific observation and measurement, and report these universal truths. These realities are often perceivable through one’s senses

(touch, taste, sight, etc.) (Gray, 2013). Positivist enquiry is most often associated with deductive logic and testing of theories as generalisable statements.

Phenomenological research, on the other hand, focuses on socially embedded realities. Phenomenological researchers contend that reality does not exist outside, or independent, of the practitioner-researcher, but is instead socially constructed and can only be understood in the context within which it occurs. Researchers are required to “bracket” their assumptions – set aside their own thoughts and perceptions – and allow for other realities to emerge in seeking to understand what is happening (Gray, 2013). Pivotal to this approach is the attempt to inductively derive meaning and understanding about what is happening from the perspective of the researched.

This project employs both positivist and phenomenological approaches: the former employing a survey designed to measure change in, and correlations between, IEO and ESE, and the latter an inductive thematic analysis of student reflections across the three stages of SHAPE implementation in an attempt to understand the personal changes experienced by SHAPE attendees. The combination of these two approaches allowed for the participants to construct for themselves a perceived reality through participating in the survey method where concepts were broken down into categories (see #1.5.2) and then they deconstructed their perceived realities through a reflective writing process where they were required to challenge “the me” by suspending old mental models and opening up to a possible unfragmented reality.

### **6.1 Study Site**

The study site was the School of Management in the College of Law and Management on the Westville Campus of the University of KwaZulu-Natal. Field trips were undertaken to Section 21 companies, business incubators and a business fair in Durban. The concluding workshop of SHAPE (Phase 8) was held at the Durban Undersea Club (Point Watersport Club).

### **6.2 Target Population**

The target population of SHAPE participants were second-year students in a three-year higher degree programme at a South African Higher Education Institute. Participant selection was initiated with a pilot test administered to the group while they were in their first year of academic studies, followed by an invitation to participate as volunteers in their second year of studies. Should a participant then proceed from Student Entrepreneur (SE) status to Young Entrepreneur status (wanting to start up a new venture), he/she would have support from university where they were enrolled in the third year of study. This served as a precautionary measure to allow a potential extended timeframe should roll-out of the programme phases not proceed as planned; the participants would thus hopefully still be available during their third year of studies.

Given these arrangements, should the SHAPE programme be repeated two or three years after its initial completion, some of the participants might have moved onto postgraduate studies, and since they would already be familiar with SHAPE, they could either be invited to assist in re-presenting SHAPE or use SHAPE as a focus area for their own postgraduate research. The potential is thus created for SHAPE to become a Living Theory project with continuous cycles of systemic action learning and action research.

### **6.3 Sampling Strategies and Sample Size**

There are two main approaches to sampling: probability sampling and nonprobability sampling. In probability sampling a random sample is drawn with every unit in the population having an equal chance of being selected. In nonprobability sampling every unit in the population does not have an equal chance of being selected. Probability sampling is chiefly associated with quantitative research, and nonprobability sampling with qualitative research (Doherty, 1994).

This study utilised a nonprobability approach to gather data for both qualitative and quantitative dimensions. Self-selected nonprobability sampling was employed initially in order to recruit participants, in that they volunteered to join the programme after seeing the SHAPE flyers around campus. Secondly, repeated surveys were conducted over the course of the SHAPE programme using convenience sampling whereby questionnaires were administered to the SE participants by virtue of their attendance in the programme contact session. Use of a nonprobability sampling technique has ramifications for the generalisability of the research findings.

The sample size was N=60. Entrepreneur-practitioners participated during these phases and were investigated, but for the purpose of this paper, this data is not presented. The sample size was a set criteria as the practitioner-researcher was specifically interested in participants who completed at three rounds of questionnaires and provided qualitative data, primarily through writing reflections.

#### **6.4 Data Collection Methods**

Data were collected through the following methods:

- Primary: Questionnaire survey method
- Primary: Qualitative reflections from participants
- Secondary: Qualitative reflections from the practitioner
- Secondary: Upkeep of a blog ([www.shapentrepreneurs.com](http://www.shapentrepreneurs.com))
- Secondary: Upkeep of a social media page on Facebook

#### **6.5 Quantitative Data Measures of Quality**

Reliability refers to the consistency with which an instrument measures a construct, whereas validity refers to the extent to which the instrument measures what it says it is measuring. In other words, validity measures strength and accuracy of a research design (Srivastava and Rego, 2011), whereas reliability measures consistency, and repeatability.

Test/re-test reliability was employed in this study as it tracks stability over time and determines the extent to which results compare as retesting ensues. There was a strong undercurrent of construct validity, as the tests were designed to reveal, and did reveal, significant associations with the underlying theories. There was also a high degree of convergent validity, as multiple different methods for measuring a construct (IEO, ESE, Theory U concepts) emerged in the SEs' reflections and in their questionnaire responses.

#### **6.6 Qualitative Data Measures of Quality**

Measures of quality in qualitative research include credibility, dependability, transferability and confirmability. Credibility was established through the use of data and methodological triangulation (survey responses and student reflections). Dependability was also established through extensive documentation by the practitioner-researcher of all changes and observations over time, firstly, through the incorporation of test-re-test in the research design, but also using the student reflections at multiple points throughout the study. This meant that careful attention was paid to documenting all the raw data generated, to assessing the method of data analysis, to the way data was kept, and to the accuracy of the data. In addition, to establish confirmability, extensive field notes were kept by the practitioner-researcher that allow other researchers the opportunity to audit the findings and determine whether they would arrive at the same conclusions.

#### **6.7 Quantitative Statistical Data Analysis**

SPSS 22 was used in processing both descriptive and inferential statistics to assess and measure respondent IEO, particularly in relation to innovation, proactivity and the five factors underpinning Theory U. A test/re-test methodology was followed in which, the questionnaire was administered in three consecutive instances (Pre-SHAPE, During-SHAPE and Post-SHAPE) and scores on each dimension were compared to determine whether the programme had brought about any change in SHAPE participants on each of these dimensions. The quantitative statistical methods were extensive, but procedures not included for the purpose of this conference proceeding.

#### **6.8 Qualitative Data Analysis**

NVivo 10 was used to analyse the qualitative data that was generated from student reflections captured on the SHAPE website and copied to Google Drive. The qualitative analysis methods were extensive, but procedures not included for the purpose of this conference proceeding.

### **7. Ethical Consideration**

Prior to commencement of the pilot test and the SHAPE project, ethical clearance was obtained from the UKZN Research Office. Participants to the pilot test signed a form of consent before the questionnaires were administered.

Collaboration agreements on youth development programmes were already in place between the University of KwaZulu-Natal and the eThekweni Municipality, the Durban Chamber of Commerce and the LED Unit. During Phase 3 (Start-up Workshops), permission for photos to be taken was sought from students and others when applicable.

In addition, the 60 student entrepreneurs who volunteered to participate in SHAPE signed an indemnity form giving written consent to use pictures and other material featuring them. The participants personally wrote their reflections and uploaded them to the SHAPE website ([www.shapentrepreneurs.com](http://www.shapentrepreneurs.com)) thereby choosing to publicly share their pictures and reflections. Students were also encouraged to use the website blog to interact with one another and positively inspire each other on their hopes of becoming a Young Entrepreneur.

In selecting photographs featuring student entrepreneurs and their intermediaries the practitioner-researcher took care to determine that none could be incriminating or demoralising in any way.

Written consent and indemnity were also obtained from each participant whenever a field trip or workshop took place outside the premises of the University of KwaZulu-Natal.

## **8. Findings: what successes did the research methodology achieve?**

The focus of this conference proceeding is a systematic literature review of the research methodology (SALAR/SHAPE) itself. This section will merely highlight key findings that successful application, implementation and action of the unique research methods lead to.

Research Question 1: What relationship exists between factors of Theory U and factors of Individual Entrepreneurial Orientation?

This research questions were addressed by two PhD candidates. First round was during 2014-2015 where the findings were significant and the PhD candidate obtained her PhD where findings contributed to new knowledge within scholarship in the relationship between these two theories. On four different occasions IEO and Theory U factors were compared between male and female participants. Since none of the scores were normal, a non-parametric test was used. The results showed that, overall, IEO and Theory U scores of male and female participants were similar. Both genders indicated similarities when moving from a reactive to a generative response field. It was also found that the age of the participants was not significantly related to IEO and Theory U scores. However, there was statistically significant correlation ( $p < 0.01$ ) between IEO scores and Theory U scores. Theory U suggests that there should be a positive correlation between co-inspiring and co-initiating or co-sensing. In addition, co-inspiring should be positively correlated with co-creating and co-evolving. The results showed that risk factors, which are part of Theory U's reactive processes of co-initiating and co-sensing, were significantly related to innovation as a co-inspiring factor in Theory U, giving confirmation of Theory U interrelationships. The research instrument or research tool was found to have several gaps and many question items tested as unreliable and invalid. The second PhD student furthering the work and acting upon the research's recommendation is working to develop a quantitative tool that's valid, reliable and suitable within a South African context.

Research Question 2: How does applying factors of Theory U develop Student Entrepreneurs' Individual Entrepreneurial Orientation?

On four different occasions during the 2013 -2014 period it was found that Theory U aspects of co-initiating and co-sensing relate to IEO aspects of risk-taking. Aspects of Theory U's co-inspiring relates directly to IEO innovation where Theory U's co-creating and co-evolving relates to IEO aspects of pro-activity. We are of opinion that this finding is now grounded and through repeat measure test in various cycles of the systemic action learning and action research project found significant, reliable and valid within the quantitative tools. It has also been found that the combination of applying Theory U and IEO has the ability to transform student entrepreneurs radically (as evident from their qualitative reflexive statements). Mahrous and Genedy (2019) emphasise the importance of "connecting the dots" in a systemic manner to develop IEO, which in return, might lead to increase socio-economic success in developing countries.



Research Question 3: How does applying factors of Theory U develop Student Entrepreneurs' Entrepreneurial Self-Efficacy?

Shahab, Chengang, Aribizu and Hader (2019) emphasise the importance of applying creativity in all forms of education to develop student entrepreneurs' ESE propensities. The research did not initially start off to investigate student entrepreneurs' entrepreneurial self-efficacy, however as the project progressed, it became clear that ESE might precede IEO in a nondualistic manner and therefore cannot be left out when investigating IEO. Two out of four quantitative tests during the 2014-2015 cycle did show indicated that ESE is a predecessor for IEO, however the other two tests were not too reliable. This relationship, as part of recommendation for future research, is currently being investigated by a PhD candidate as part of his research. Another fascinating theme that emerged throughout all qualitative and quantitative testing in both cycles (2014-2015, and 2016-2017) indicated that one cannot exactly pinpoint which occurs first in an individual's being: IEO or ESE. The principle of nondualism, as well as Psychoneuroenrocological (PSN) findings from neurologist Dr Ian Weinberg (2015) indicates that all forms of Being are integrated and interrelated, therefore these processes does not necessarily occur in a linear process, but more in a parallel process. (Shahab et al., 2019) concludes that entrepreneurial education moderates relationships between ESE, entrepreneurial creativity, entrepreneurial intent.

Research Question 4: What barriers to youth entrepreneurship do Student Entrepreneurs experience whilst participating in a systemic action learning and action research programme to develop entrepreneurship?

This research question ties into one of the SALAR objectives which was to determine the barriers that these student entrepreneurs who participated in the SHAPE program. Experienced whilst they were delving themselves from becoming student entrepreneurs, to young entrepreneurs who might potentially be ready to start-up a business and have entrepreneurial self-efficacy in doing so. This project objective was allocated to a full time masters of Commerce student who in return used this project objective as his primary research aim. The student-investigator deconstructed the objective down to investigate potential challenges the students entrepreneurs might have encountered whilst interacting with roleplayers in the SALAR SHAPE project (See Figure 3). Interesting findings from the 2013-2014 iteration on the top three barriers that student entrepreneurs experience are that they firstly see themselves, their own skills, abilities and levels of confidence as their biggest barriers. Secondly, they found it a challenge to collaborate with existing entrepreneurs who owns small or medium size businesses and felt that these business owners are not keen to help them develop as young entrepreneurs. Thirdly, they see their community as a large barrier. They felt that there are not enough support from their community to help them develop as young entrepreneurs and that there are not enough positive inspiration coming from their community leaders. They felt that often community leaders make empty promises to offer help, but when it come to action or continuous leadership, the support structure falls flat. Similar research done by Innocenti and Zampi (2019) emphasise the importance of bridging these barriers as start-ups need systemic synergy to grow.

## **9. Conclusion**

Applying the research methodology of Systemic Action Learning and Action Research proves as a possible way to bridge systemic disconnect and develop entrepreneurship. This applied research method need extended periods of application and implementation to show positive and significant development. Systemic Action Learning and Action Research as applied methodology is cyclical and in the research case presented above, repeated according to a combination of Theory U's cycles and van der Westhuizen's (2016) framework of systemic action learning and action research.

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# Improving Knowledge Generation in Design Science Research through Reflective Practice

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**Abstract:** Epistemology refers to the philosophy of knowledge and aims to address central questions of how we create new knowledge. All research paradigms can be distinguished in terms of epistemological assumptions, that is, assumptions of how knowledge is produced in the respective paradigms. Design science research (DSR) is a research paradigm often used in technical disciplines for the creation of artefacts. DSR has roots in pragmatism, where beliefs and theories are evaluated based on the success of its practical application. New knowledge is produced in DSR when original artefacts are created to solve a problem. The epistemological assumption of DSR can then shortly be defined as ‘knowledge through making’. At its core, DSR is goal-orientated and its practical approaches are focused on delivering the product according to straightforward processes - without being affected by human factors. This process of acquiring new knowledge is efficient but not necessarily effective in terms of capturing all aspects of the experience of the practitioner. Frameworks exist for the creation of knowledge in DSR, but the process of knowledge generation is not explicit. The aim of the paper is to guide explicit knowledge generation in DSR. The research question is “How can we make the process of obtaining knowledge in DSR more explicit?” DSR Frameworks are iterative in nature and focus on the creation and evaluation of artefacts. There is an implicit assumption that reflection takes place in these iterations. Schön, author of *The Reflective Practitioner*, writes that new knowledge is produced through reflection during and after an event has occurred. He also states that you can only have a complete understanding of a problem through the dual process of reflection-in-action and reflection-on-action. We argue that this also holds true for artefact design and development in DSR. A reflective DSR practitioner can explicitly indicate how knowledge is produced in the design science research cycle. The effective use of reflective practice changes each individual phase of a DSR framework from goal-orientated to problem-orientated. Epistemologically, knowledge is then produced through ‘learning by doing’, which gives DSR a worldview that supports reflective practice. The paper promotes the incorporation of reflective practice in DSR and provides a demonstration thereof in an example on the preparation of IT students for their chosen career.

**Keywords:** Design science research, reflective practice, epistemology, knowledge generation

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## 1. Epistemological assumptions of design science research

All paradigms have ontological, epistemological and axial assumptions which guide the research process (Vaishnavi & Kuechler, 2004; Oates, 2006; Scotland, 2012). Even though these terms motivate assumptions about reality, knowledge and value for any intellectual effort, they are implicit for most people, including researchers (Vaishnavi et al, 2017). Researchers may conduct investigations for the duration of their professional careers without realising the philosophical implications of their research approaches (Kuhn, 1996). One of these terms, epistemology, refers to the theory of knowledge and is concerned with understanding the limitations, the validity and the scope of knowledge (Myers, 2009). An epistemological assumption is concerned with exploring the creation of knowledge and the manner in which individuals learn about their supposed reality i.e. what does knowledge depend on, how can we be sure that what we know is correct. Epistemology explains how knowledge is created, how knowledge is attained, how knowledge is articulated and how knowledge is communicated (Scotland, 2012).

In design science research (DSR), new knowledge is created by designing innovative artefacts as a solution to a relevant human problem (Hevner & Chatterjee, 2010). Vaishnavi and Kuechler (2004) support this definition by stating that DSR alters the world through the creation of innovative artefacts. An artefact can include, but is not limited to, constructs, models, methods, and instantiations (March & Smith, 1995), as well as frameworks, architectures, design principles and design theories (Purao, 2002; March & Smith, 1995; Gregor & Jones, 2007; Gregor & Hevner, 2013).

In DSR, a piece of information is factual and the meaning of the information is made clear through circumscription. An artefact is developed, and the interaction between its components results in its behaviour.

Descriptions of these interactions become information, and the level to which the behaviour is predictable makes the information factual. DSR is dependent on an artefact that functions in a predictable manner. The functionality the artefact delivers comprises of what the meaning of the artefact is – which supports the epistemological stance of ‘knowing through making’ (Vaishnavi et al, 2017). The theoretical standpoint of DSR may change as it iterates through phases of artefact development, changing from a positivist whilst recording behaviour, to an action researcher when interpreting the observations and planning subsequent interventions.

DSR practitioners have more success when they move between pragmatic and critical realist standpoints, directed by a pragmatic evaluation of development in the DSR cycle (Bunge, 1984). “The design science researcher arrives at an interpretation (understanding) of the phenomenon and the design of the artefact simultaneously” (Purao, 2013).

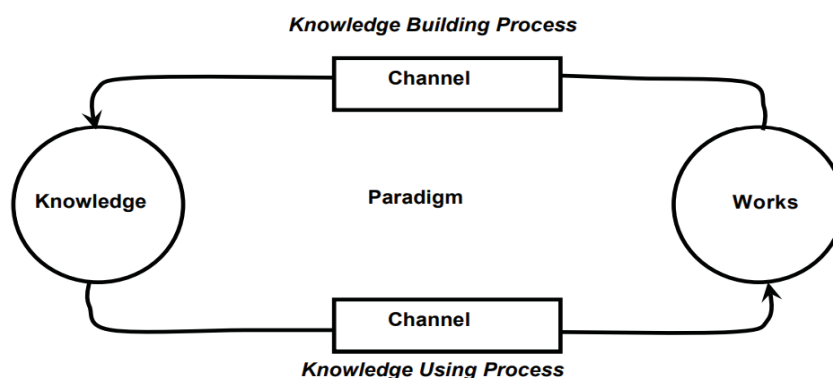
The aim of design science research then is to contribute new design science knowledge that is “a body of intellectually tough, analytic, partly formalizable, partly empirical teachable doctrine about the design process” (Simon, 1996). The design science researcher can then be seen as a pragmatist (Peirce, 1931).

## 2. Design science research process

This section provides an overview on the role of knowledge in DSR and how knowledge is generated.

### 2.1 Role of knowledge

“Knowledge is generated and accumulated through action. Doing something and judging the results is the general model... the process is shown as a cycle in which knowledge is used to construct works, and works are evaluated to build knowledge” (Owen, 1997). A graphical representation of this can be seen in Figure 1. The process to build knowledge through creation is not unstructured, although sometimes thought to lack rigour (Vaishnavi et al, 2017). The channels in the diagram below are the “systems of conventions and rules under which the discipline operates. They embody the measures and values that have been empirically developed as “ways of knowing” as the discipline has matured. They may borrow from or emulate aspects of other disciplines’ channels, but, in the end, they are special to the discipline and are products of its evolution” (Owen, 1997). In short, the creation of artefacts produces new knowledge as part of the knowledge building process. Researchers then delve into the knowledge base to inform designs of new artefacts. This then becomes an iterative process where knowledge is added to the knowledge base through creation, and improved artefacts are created due to the existing knowledge base.



**Figure 1:** A general model for generating and accumulating knowledge (Owen, 1997)

Different types of contributions can be made to the knowledge base of design science research. Levels of abstraction are explained where contributions to DSR can start with the creation of artefacts, evolve into design principles for artefacts and further be defined into design theories (Purao, 2002).

Design science research is categorised into two groups of knowledge, descriptive and prescriptive knowledge. Descriptive knowledge (omega knowledge) is concerned with the ‘what’ and prescriptive knowledge (lambda knowledge) is concerned with the ‘how’ knowledge of created artefacts (Gregor & Hevner, 2013). Examples of descriptive knowledge include phenomena (such as observations, measurements and classifications) and sense-making (principles, theories, patterns etc.) Examples of prescriptive knowledge include artefact creation such as constructs, models, methods, instantiations and design theory.

## 2.2 Knowledge generation

Within the context of DSR there are different research approaches available. Vaishnavi and Kuechler (2017) established an original framework for design science research in 2004, which was later adopted by Hevner and Chatterjee (2010) (Figure 2). The framework was an adaptation of the model for a computable design process (Takeda, 1990). The phases in the design process and the design science research are similar, but the activities that take place in each phase are significantly different. The biggest difference is that the DSR process requires that the contribution of new knowledge be a key focus of its approach. This framework is still applicable in their latest research. The DSR framework iterates through five phases. The researcher first becomes aware of a problem, suggests a possible solution to the problem, the suggested solution is then developed and evaluated until the research process can naturally conclude. The DSR framework is goal-orientated. Knowledge is generated through circumscription of the process followed to reach the conclusion. This contribution of knowledge is known as Design Science Knowledge. Notably, Peffers et al (2008) also created a model for DSR called the DSRM (design science research methodology) model. Peffers et al (2008) appear to present this model as an evolved version of the DSR framework by Vaishnavi and Kuechler (2004) by iterating through six clearly defined phases that follow the same logical flow of events. When comparing the DSR framework and the DSRM model, both approaches suggest that reflection and abstraction take place in their final phases only.

Knowledge is explicitly generated during the last phase of the DSRM model, by suggesting that the results should be communicated through scholarly and professional publications.

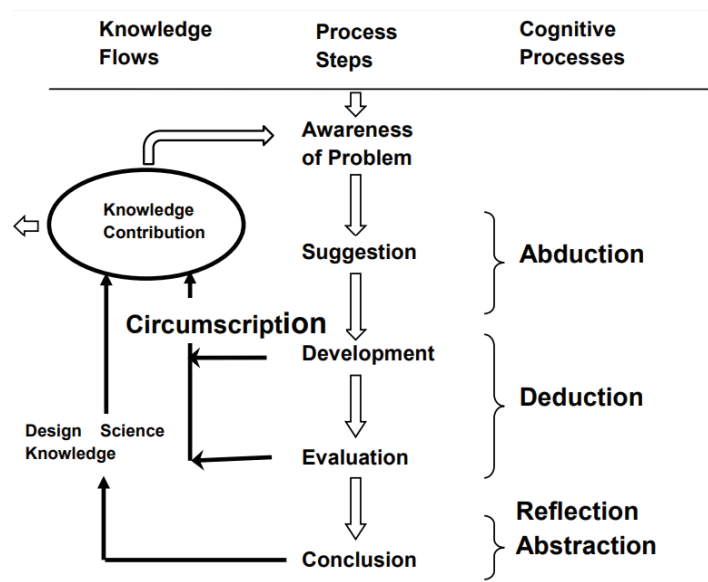


Figure 2: Cognition in the DSR framework (Vaishnavi et al, 2017)

There is an implicit assumption that reflection takes place in both approaches. The presentation of the models however, only explicitly suggests that reflection takes place in the last phases when the project is concluded and communicated. The cycle for cognition in DSR (Figure 2) illustrates the cognitive process followed by indicating the type of knowledge that is produced in each phase of the DSR framework. The DSR framework goes through cycles of abduction, deduction, abstraction and reflection. The creative intellectual process of reflection is used in the conclusion phase to contribute to design science knowledge. In the DSR framework, the overall contribution to advance knowledge needs to be argued at the conclusion of the project (Vaishnavi et al, 2017).

## 2.3 Limitations in DSR knowledge generation

The aim of the paper is to report on how the process of knowledge generation could be made more explicit if reflective practice is applied throughout the framework, and not only when concluding a project as suggested in Figure 2. The premise of the research implies that there are limitations in the knowledge generation process of the design science research framework.

Knowledge generation in DSR is not explicit. DSR frameworks are iterative in nature and focus on the creation and evaluation of artefacts. Knowledge generation is a result of circumscription of the process followed. The

contribution of the knowledge then adds to the knowledge base of design science knowledge. There is an implicit assumption that reflection takes place in these iterations but it is only explicitly stated as part of the conclusion phases of the approaches.

A body of knowledge already exists on the foundation of learning by doing. The epistemological assumption of DSR which is “knowing through making” is limited when compared to the epistemological assumption of reflective practice which is “learning by doing”. Even in scientific professions, when practitioners address unique problems, it is an artistic process in which reflective practice takes place (Schön, 1983). Reflective practice is a professional learning and development strategy focused on improved practices, based on assumptions that cause-effect relationships shape behaviour (Osterman, 1998).

Reflective practice is a continuous process. Building on the first limitation listed, the DSR framework only explicitly states that reflection/ abstraction takes place when the cycle has concluded. Reflective practice is intuitively similar to DSR but incorporates known scientific methods for explicitly stating how knowledge is generated. Using reflective practice should be a continuous process throughout the phases of the DSR framework and should not be limited to the conclusion of the artefact.

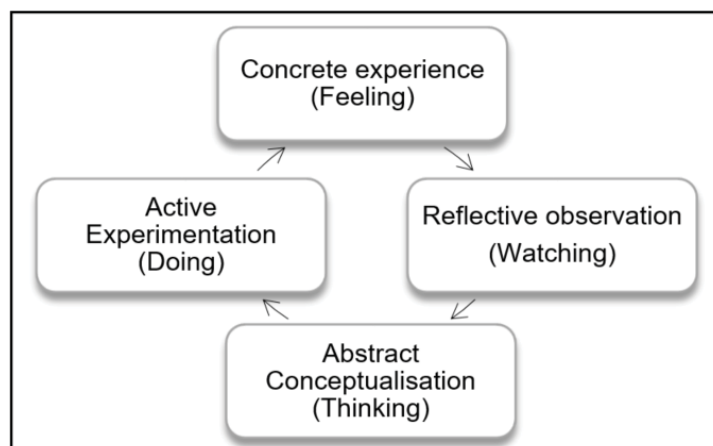
### **3. Explicit knowledge generation in reflective practice**

This section provides a shared understanding of reflective practice, and the known scientific methods for knowledge generation within its process.

Reflection is an action of self-deliberation that involves using prior experience and contextual awareness. It is an essential skill that enables one to formulate a philosophy of sharing knowledge and can be used as a standard to observe and measure other professionals’ practices (Atkinson & Irving 2013). Reflective practice comprises carefully considering our personal experiences when knowledge is applied to practice (Schön, 1983).

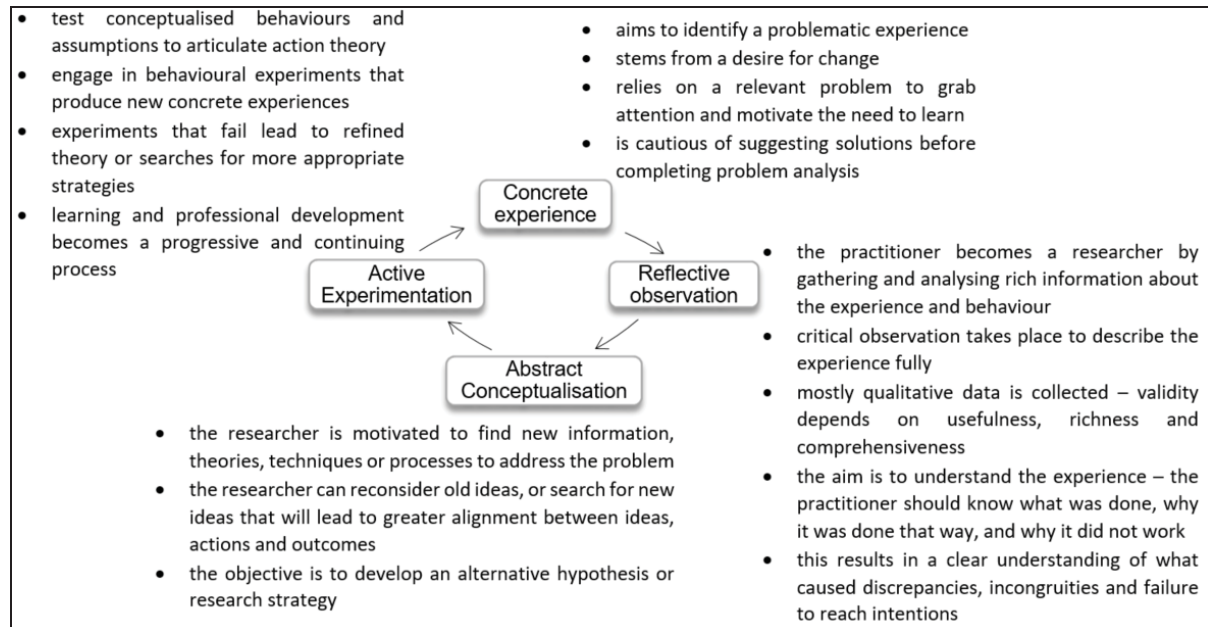
A reflective practitioner should continuously reflect on his or her experiences and draw knowledge from these practices. Reflective practice is the dual process of immediate reflection during a situation (reflection-in-action) and also reflecting on the situation after it has been resolved in order to better resolve similar scenarios in the future (reflection-on-action) (Schön, 1983). Reflective practice has been defined by numerous academics as the process of learning from and through one’s experiences with the aim of acquiring a new understanding of practice ((Boud et al, 1985; Boyd & Fales, 1983; Mezirow, 1981, Jarvis, 1992)). The academic evolution of reflective practice has produced a number of explicitly stated processes for knowledge generation.

Reflective practice is rooted in experiential learning, where the process of learning is most effective when it starts with a problematic experience. The four stages of learning according to Kolb (1984) gives experiential learning as a cyclical process that starts with an experience, continues with reflective observation, leads to an abstract conceptualisation of the problem and results in active experimentation to address the problem. The last stage may result in a different experience which prompts the continuation of reflective observation and so on (Figure 3).



**Figure 3:** The four stages of learning (Kolb, 1984)

Osterman and Kottkamp (1993) explains that while the experiential learning cycle is a process for using experience as the foundation of learning, that learning cannot take place without reflection, and reflection should be integral to the process of action-taking. Reflective practice, summarised, is the “dialog of thinking and doing through which I become more skilful” (Schön, 1987). Figure 4 provides a summary of what is expected in each of the phases of the cycle.



**Figure 4:** An adaptation of experiential learning explained (Osterman & Kottkamp, 1993)

During the abstract conceptualisation phase, the practitioner is motivated to search for new and unique theories, techniques, processes or ideas to solve the problem (Osterman & Kottkamp, 1993). This stage of the experiential learning cycle deals with abstraction of new concepts and provides a known strategy for knowledge generation. The principle of abstraction and generalization given by Klein and Myers (1999), provides an explicit reasoning to knowledge generation for this reflective practice process. They explain that theoretical abstractions should be carefully conveyed by the researcher as it was experienced and collected, so that the reader can understand how the theoretical insights were reached. Building on the work of Walsham (1993), the validity of drawn inferences and conclusions should not depend on the ability to present the information statistically, but rather on the credibility and impact of the logical reasoning used to describe the results.

When reviewing the DSR framework, it is notable that ideas and recommendations are given in the *Suggestion* phase. The knowledge generated from this phase cannot be assumed to be abstraction, as it relies more often on a plan that is driven by instinct or intuition, and not on explicit methods. Abstraction is an explicit process for theory building and through the use of reflective practice the knowledge generated could contribute to the prescriptive knowledge of DSR.

To summarise, the following advantages of using reflective practice for improved knowledge generation in design science research are noted:

- Knowledge generation in reflective practice is explicit.
- Knowledge generation in reflective practice fits into known scientific methods.
- Knowledge generation in reflective practice is intuitively similar to that of design science research when following a cyclical model for creating ideas.
- Knowledge generation through reflective practice puts a stronger focus on prescriptive knowledge in design science research.

The next section provides an overview of how these advantages motivate the use of reflective practice to enrich design science research knowledge generation.

#### **4. Improving knowledge generation in DSR through reflective practice**

New knowledge in DSR is produced through the process of creation. The creation of artefacts is a practical approach to knowledge building. The practical nature of DSR has roots in pragmatism, where approaches and theories are evaluated based on their practical application. DSR and pragmatism both lend toward goal-orientated approaches, which is why knowledge generation through reflection typically only takes place when the project has concluded. This process of acquiring new knowledge is efficient but not necessarily effective in terms of capturing all aspects of the experience of the practitioner.

A reflective DSR practitioner can explicitly indicate how knowledge is produced in the design science research cycle. The effective use of reflective practice changes each individual phase of a DSR framework from goal-orientated to problem-orientated. Epistemologically, knowledge is then produced through 'learning by doing', which gives DSR a worldview that supports reflective practice. Reflective practice focuses on the user's ability to reflect on situations as they occur but also after they have occurred to improve future practices.

Within the context of design science research, reflective practice is a valuable approach for knowledge generation in a project. Reflective practice can be demonstrated in the design science research framework.

The DSR framework iterates through five phases, the first of which is becoming aware of a problem. An individual wishing to do research on a specific problem area has already employed some form of reflective practice by researching a phenomenon that cannot be addressed by tacit knowledge or knowing-in-action.

During the suggestion phase the researcher could offer a solution from his existing knowledge but it would be better practice to include other researchers to jointly reflect on possible solutions for the problem. During the development phase the research will reflect on the initial design of the artefact and choose to conduct evaluation methods to better understand the context of the artefact. During the evaluation phase the researcher will include users or experts to assess the artefact. This is a deeply reflective practice as the feedback obtained creates a richer picture of the solution than the researcher could have suggested on his own. During the conclusion phase the researcher reflects on the methods he used and determines whether the artefact is an appropriate solution to the original problem. He also determines whether new problems may arise which may need suggested solutions and so on. This also is a deeply reflective practice as the researcher cannot conclude the study if he believes that other researchers will not accept the results. The DSR framework in its entirety can then be seen as following a process of reflective practice, even though researchers only propose reflection in its conclusion phase (Vaishnavi et al, 2017).

The reflective practice process of experiential learning can be used in the DSR framework for improved knowledge generation. The DSR framework is iterative in nature and can move forwards or backwards in any of its phases. It can then be suggested that the cycle of experiential learning should take place between phases to promote abstraction and explicit knowledge generation. Furthermore, the process of moving forward in the DSR framework is typically when reflection-in-action takes place e.g. 'What do I currently need to move forward to the next phase?' The process of moving backwards in the DSR framework is when reflection-on-action takes place e.g. 'How can I improve future iterations under similar circumstances?' Figure 5 provides a graphical representation of a DSR framework enriched with reflective practice for improved knowledge generation.

The use of the DSR framework enriched with reflective practice can be used to explicitly indicate knowledge generated for all types of artefacts. As depicted in Figure 5, the reflective practice cycle is incorporated in each phase of the DSR framework, allowing a reflective process of abstraction to take place for knowledge generation before continuing to the next phase. This method of reflective practice provides a scientific approach for knowledge generation throughout the DSR framework, and not only when concluding a developed artefact as depicted in Figure 2. A demonstration of the application of the reflective practice DSR framework is explained in the next section.



### A Reflective Practice DSR framework

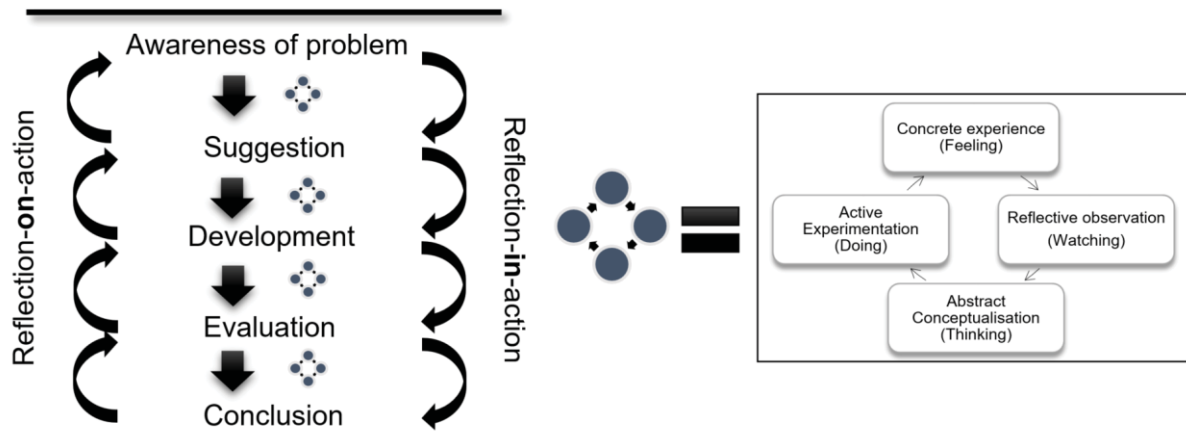


Figure 5: A reflective practice DSR framework

### 5. Demonstration

The paper aims to improve knowledge generation in DSR through reflective practice. An example thereof is provided in context of the preparation of IT students for their chosen career.

There is an increasing concern that information technology (IT) graduates lack certain skills expected by industry when they enter the workforce. The researchers became *aware of the problem* and *suggested* a possible solution. An artefact in the form of guidelines for bridging the gap between IT theory at university level, and IT practice at industry level, could provide insight on improved practices. The process naturally lent itself to the phases of the DSR framework for artefact creation, and limitations in its knowledge generation process for the guidelines were identified. Following the original DSR framework resulted in guidelines that were only truly reflected on towards the end of the project. When the guidelines went through another iteration of application in context, more gaps were noted than guidelines originally produced. This led the researchers to believe that the DSR framework is a well-structured process for developing a prototype version of an artefact, but it lacks a scientific approach to knowledge management. The DSR framework is intended for experimental creation but does not explicitly indicate how to generate knowledge and how to retain and improve the knowledge generated before a project is concluded. Research conducted provided evidence on the validity of experiential learning through reflective practice with the focus on abstraction for improved knowledge generation. Following the process for reflective practice between phases of the DSR framework added value to the knowledge generation process and resulted in guidelines for how to reflect-in-action, and reflect-on-action. Using the summary on experiential learning for reflective practice given in Figure 4, Table 1 provides an overview of how reflective practice was applied in the DSR framework in context of the problem (building on the model presented in Figure 5).

Table 1: A demonstration of reflective practice in the DSR framework

DSR framework	Reflective practice cycle	Problem in context	Explicit knowledge generation
Awareness of problem	Concrete experience	Graduates lack certain skills expected by industry when entering the workforce. This raises the question of what higher education can do additionally to better prepare students.	Strategies are researched and evaluated for its appropriateness in addressing the problem. Explicit knowledge is generated in the form of proposed strategies that could suit a specific problem.
	Reflective observation	Talk to students, educators and members of industry to better understand the problem from different perspectives. Identify areas for improvement.	
	Abstract conceptualisation	Find strategies that can be used to address the areas identified for improvement.	
	Active experimentation	Talk to students, educators and industry to suggest the strategies and their expectations thereof.	
Suggestion	Concrete experience	A gap in literature is identified for guidelines to address specific skill shortages in IT students. This raises the issue of how these guidelines can be developed to address the problem.	Gaps in literature are identified. New information is added to the knowledge base in
	Reflective	Research is conducted to find existing guidelines that relate to	

DSR framework	Reflective practice cycle	Problem in context	Explicit knowledge generation
	observation	the problem. Existing literature is critically reviewed to determine whether all strategies suggested are addressed by all existing guidelines.	order to address the gap.
	Abstract conceptualisation	Gaps in existing literature are identified. New theories/processes in the form of guidelines must be developed to address the missing information.	
	Active experimentation	Talk to students, educators and industry to determine whether the existing guidelines and proposed new guidelines saturate the current need for skill development for work-readiness.	
Develop-ment	Concrete experience	After starting to follow the guidelines within an IT curriculum, more gaps in literature are identified.	Limitations to chosen strategies are identified. Suggestions to address the limitations are presented.
	Reflective observation	The researcher becomes aware that addressing these guidelines at exit-level of a curriculum is too late in some instances to successfully prepare the soon to be IT graduate.	
	Abstract conceptualisation	The researcher is motivated to find strategies to prepare the future IT graduate. The researcher forms a conceptual framework that using the guidelines at an earlier stage of the curriculum can prepare the future IT graduate in a systematic manner.	
	Active experimentation	The guidelines are incorporated at entry-level of the IT curriculum to test its usefulness, and to determine whether a difference in work-readiness can be observed.	
Evaluation	Concrete experience	A problem is experienced when using the guidelines at entry-level of the curriculum. The motivation for following the guidelines for first year students is different compared to final year students. It is noted that the guidelines cannot be applied in the exact same manner for both groups of students.	Different strategies are suggested for different contexts of the same problem. Evaluation of the guidelines contributes knowledge on successful and unsuccessful approaches.
	Reflective observation	Talk to students at different year levels to understand what will motivate them to improve certain skills.	
	Abstract conceptualisation	Find strategies of applying the guidelines at different year levels. The strategies should address the context of the environment of the student to better motivate their need for learning.	
	Active experimentation	Apply the guidelines in context to the level of the student. Explain the need for developing the skill for industry to the student to motivate the acceptance of the guidelines. Follow the guidelines for both levels of students, but adjust the scope of the activities so that it is relevant to the student's need to develop.	
Conclusion	Concrete experience	The guidelines are not final after a limited number of iterations have been concluded. The guidelines should be continuously evaluated and reflected upon for relevance.	Successes and failures of the overall artefact can be documented to contribute to the related fields, as well as the knowledge base of reflective practice and design science research.
	Reflective observation	Continuous discussions with students, educators and industry are necessary to ensure that the guidelines remain relevant, especially in a constantly changing environment such as IT.	
	Abstract conceptualisation	As observed, guidelines should be updated as required to ensure consistent relevance of strategies and approaches suggested throughout the DSR framework. If known strategies no longer provide desired results, new approaches should be investigated.	
	Active experimentation	Preparing future IT graduates is an iterative and reflective process. As change occurs, guidelines should be updated to remain current and relevant. Guidelines should continuously be applied at all levels, contextual to the environment of the student, to ensure a well-rounded work-ready student.	

## 6. Summary

The DSR framework is an excellent tool for prototyping artefact creation, but it is limited in its explicit methods for knowledge generation. When following the DSR framework, the researcher will iterate through the phases and produce an artefact that concluded as a *prototype* that addresses the *current* requirements of the problem. DSR more often results in outstanding artefacts, which can be implement and used for the specified problem, but that is not easily adaptable to a changing environment. In DSR, when the problem changes, a new artefact needs to be created and the DSR framework has to restart in the first phase. The goal-orientated nature of DSR is effective for immediate results, but not efficient in anticipating problems in a holistic manner.

Abstraction for tried and tested approaches is only reflected on in the concluding phase, which provides limited knowledge generation for the knowledge base of DSR. It is notable that following a DSR framework enriched with reflective practice results in a more rounded artefact, due to the reflective cycle that takes place between phases. The cyclical process of reflection allows the practitioner to address the current problem as well as anticipate and prepare for future variations of the problem. This allows the practitioner to holistically apply the DSR framework, and conclude the artefact without having to restart at phase one when problems are identified. This process of reflection results in improved knowledge generation for design science research.

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# The Possibility of the Third Approach to Marketing Research: Critical Realism

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**Abstract:** For a long time, there have been two approaches in the research field of marketing: positivism methodology and interpretivism methodology. Positivism holds that the world exists objectively. The research methods include statistical survey and experimental research. Based on the results, the truth is obtained, which are then "regularized", "theorized" or "modeled". The positivism-based marketing research includes the development of new products and the construction of consumer behavior models. Interpretivism holds that there is no objective world, as the world is constructed by human beings, and truth arises from the interaction between "human and human" or "human and society". The research methods are mostly qualitative approaches. The interpretivism-based research, through participating or observing the product development process, investigates the experience and joyfulness of the consumers generated during the consumption process. Critical realism is the unity and transcendence of positivism and interpretivism. Critical realists hold that the world exists objectively, but human understanding is subjective. Therefore, the research is not to uncover the "constant rule" between the representations of things, nor to simply understand and explain social concepts and meanings, but to discover and explain the underlying mechanisms that cause representations of things to be constant. Critical realism has launched a third path for the study of marketing. At present, the existing research in the field of marketing includes the research on innovative models of cultural products, analysis of the causes of green brands segmentation from the aspects of individual consumers, the rationality of green brands and the reference groups, as well as the research on the micro-mechanism of media dissemination. Throughboth quantitative and qualitative research methods, the limitations of these two approaches, positivism and interpretivism, can be overcome. It is expected that such researches and future researches can reveal the "mechanism", "semi-law" or "semi-rule" in the field of marketing, which will bring more influence and provide more inspiration to the research in the academic and practical fields.

**Keywords:** positivism; interpretivism; Critical Realism

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## 1. Introduction

Since it was first proposed in the U.S. in the early 19th century, marketing has gone under more than 100 years of development. Converse (1945) started the methodological debate with the question "Is marketing a science or art?". Researchers from various countries conducted several stages of debates on the discipline nature, the scope of the concept, the philosophical view of the theoretical basis and the understanding to the world on marketing research. Since the 1980s, the debate on marketing has been mainly divided into two camps: positivism with logical empiricism as the philosophical view proposed by Hunt as the representative; non-positivism or relativism with skepticism and criticism towards positivism put forward by Anderson as the representative. After the 1990s, there was an interpretivism methodology in marketing. The philosophical argument of this methodology is also relativism. Since then, the debate on marketing has been mainly about positivism and interpretivism (Wang, 2013).

Both realism and non-positivism continue to develop and criticize each other in the history of scientific philosophy. Kuhn, who proposed the "paradigm" theory, explained the progress of science with historical data statistics, but was pointed out to verify its relativism with the positivism methodology. Researchers who support positivism often use the word "paradigm" to express their views, but the basic philosophical view of this word is relativism. Therefore, the methodological debate in the history of philosophy of science will continue. In all areas of social science research, the methodological debate based on different philosophical views continues. In this paper, the two most representative methodologies in marketing, positivism and interpretivism, are first introduced for their basic philosophical concepts and research methods. The third methodology, critical realism, is then introduced. Although there is still little research on critical realism in the field of marketing research, the possibility of marketing research based on critical realism will be proposed after introducing the basic philosophy of critical realism. This research is expected to serve as an inspiration for broadening the research field of marketing and promoting the research and development of marketing.

### **1.1 The first path of marketing research: positivism**

From the establishment of marketing as a discipline to the 1980s, its mainstream, rarely questioned methodology is positivism. Positivism was proposed by Auguste Comte (1798-1857) and his colleague Henri de Saint-Simon (1760-1825) in the 19th century (Hunt, Chen, Lou, Tian, Chiao, and Wang, 2006). Positivism contains many schools such as logical positivism, logical empiricism and falsificationism. The viewpoints of those schools are different, but their basic philosophical views are consistent. Positivists believe that social phenomena are essentially the same as natural phenomena. Although social phenomena consist of human activities, there is an objective world that is independent of the human will. People regard themselves as subjects, regard nature as objects, constantly calculate and measure nature with an attitude of "opposition between subject and object", and take manipulating nature and conquering nature as the highest goal. From a methodological point of view, we can understand the world and approach the truth through rigorous and correct measurement and observation. Positivists advocate the use of statistical investigations, experimental research, and other research methods. After the introduction of universally applicable truths, such as the introduction of relationships between elements, these relations are formulated as rules. Since these relationships exist objectively and are not affected by the situation, they can be used as rules for general application. In the field of social science research, it is usually expressed as creating various models.

In the early stage of development, marketing was guided by classical economic theory. From the 1950s to the 1980s, it was based on the theory of microeconomics. Under the influence of economics, the positivism methodology is also adopted in marketing. In the marketing research including product development, consumer behavior analysis and advertising strategy, the theoretical presupposition is that there is an objective world, consumer demand is independent of the consumer and exists in the objective world, and its theoretical premise is that people are the subjects of this world, regardless of whether the subject is an enterprise or a consumer. Enterprises can understand consumers' needs by investigation. In order to understand and approach the needs of consumers, that is, the objective world, truth, and facts, it is very effective to collect a large amount of data, because inductive methods can approach the truth. Similarly, in the field of advertising, according to the philosophical thinking of positivism, there is an objective world that is independent of human will. The enterprise (advertiser) produces product information and gives consumers incentives in the objective world. Consumers can receive incentives unconditionally.

The research methods and contents in the field of marketing based on positivism are as follows:

Japanese researcher Ishii Junzo summarized the typical research methods of positivism (Ishii, 2009), i.e. 1) to make assumptions by induction from experience or deduction from theory; 2) to define the concept groups that constitute assumptions; 3) to construct a schema (or model) of conceptual relationship that can be verified. 4) to determine the indicators that can measure concepts; 5) to collect data that can be statistically analyzed to carry out statistical analysis such as multivariate analysis; 6) to confirm the appropriateness of the indicators; 7) to interpret its theoretical and practical significance if the results predetermined in assumptions appear, or to re-discuss the appropriateness of concepts, indicators and models and then conduct research again after revision if the predetermined results do not appear. After obtaining the truth according to such research methods, the truth is considered to be generally applicable, i.e. it is assumed to be applicable in any future situation. Therefore, these truths are "regularized", "theorized" or "modeled".

In the research of new product development, a large number of consumers are surveyed by questionnaires. After statistical data are obtained, it is believed that what the consumers choose most is the demand of consumers, and new products can be launched according to such demand. Coca-Cola Company also uses this method in the research of new tastes.

In the research and analysis of consumer behavior, it is considered that consumer choice is the result of decision of intention and decision of intention is the result of information processing. In order to seek the formalization of consumer behavior, it is necessary to study the causality and rules between independent variables and subordinate variables, and to express the causality and rules by language or mathematics.

Therefore, in the analysis of consumer's behavior, decision process model, perception/evaluation model, attitude formation model, rational choice model, probabilistic process model, market-response model and so on are worked out. Consumers are considered people with certain reasonable judgment ability. Under such premise, consumers will actively seek all kinds of information beneficial to themselves in order to solve their

own problems. Therefore, the research on the model of consumer information processing is the mainstream of consumer behavior research (Shimizu, 2006).

In the field of advertising communication research, empirical research is conducted on social communication phenomenon or social communication behaviors through observation, measurement and quantifiable empirical facts. The main research focuses on how to conduct advertising, in which channels to publicize, what kind of effects can be obtained, how to measure these effects, etc. This viewpoint is based on the methods of experiment, survey, review, statistics, charts and figures. Typical models are AIDAS model, DAGMAR model, etc. The purpose of these researches is to obtain the correlations of predicting people's actions, to plan and control advertisers' advertisements, so as to obtain more accurate results (which can be converted into currency), and to conduct technical and theoretical research (Mizuno, 2003).

However, some researchers have criticized the positivism research. For example, Toshima from Japan pointed out that the research on understanding and predicting the needs of consumers based on the positivism theory cannot be successful because consumers themselves do not know what they need (Toshima, 2003). Masao Nakanishi, who has studied consumer behavior mainly based on positivism, pointed out that looking back on a large number of studies on consumer behavior over the past 50 years, the research results have had very little impact on Japanese marketing applications (Nakanishi, 2001). Numagami pointed out that the social sciences dominated by human beings are unpredictable, and problems cannot be solved by formulating laws (Numakami, 2000).

## **2. The second path of marketing research: interpretivism**

In 1983, Holbrook and Hirschman first mentioned the limitations of the positivism methodology in the field of consumer research. They conducted research on the "use experience" of products and services and proposed the concept of "hedonistic consumption". They pointed out that hedonistic consumption refers to consumers' five senses, dreams, and evoked emotion when they use the product, which are specifically expressed in music appreciation, watching performances, watching sports and other consumer behaviors. In the analysis, they found that the original research method based on positivism methodology was difficult to study such consumer behaviors. In the past, consumer behavior analysis focused on analyzing consumers' choice behaviors, that is, why do consumers choose such behaviors. However, when studying hedonistic consumption, researchers found that it is impossible to study and summarize the size of the paintings that consumers like, why they like the performance, etc. In other words, they could not summarize the objective factors of choice behavior. In the study of hedonistic consumption, more attention should be paid to consumers' "use behavior" than to "choice behavior" (Matsuo, 2005). Studying the use behavior is to understand the consumer's experience in the process of use. Because the past theory on consumer behavior cannot explain the happiness of "movement" that consumers enjoy while listening to music, consumers can only understand them. Therefore, they emphasized the need to introduce new research methods in the analysis of consumer behavior. The interpretivism methodology was introduced into the field of marketing research in this context.

Taking the view of Holbrook and Hirschman as an opportunity, researchers in various countries gained a deeper understanding of the interpretivism methodology and conducted further research. The interpretivism developed from the hermeneutics. It includes Weber's social constructivism, Husserl's phenomenology, ethnography, semiotics, humanism and other philosophical viewpoints and research methods, forming the independent philosophical thought. Interpretivists believe that there is no objective world, that the so-called world is constructed by people (Chu, 2007), that the world is "projected" through the eyes and thoughts of people and that the reality is essentially psychological and perceived (Takei, 1997). They believe that truth arises from the interaction between "man and man" or "man and society", so situations or contexts are necessary conditions for the production of truth. They think that the positivism method of excluding subjective factors is not desirable. Moreover, as the situation changes, truth is not a rule and cannot be universally applied to any condition. They argue that understanding and interpretation are the basic methodology of social science, just like Dilthey mentioned, "We explain nature, and we understand life." They use qualitative research method and believe that research is an understanding of phenomena in a particular time or space without pursuing universality and regularity.

The research in the field of marketing based on interpretivism includes the following.

In the research field of new product development, instead of issuing a large number of questionnaires for investigation, typical consumers are found to understand consumers' consumption behavior and to interpret consumers' needs to a certain extent by participatory observation, in-depth interviews, market-oriented ethnography and other research methods. For example, when studying consumers' demand preferences for mobile phone accessories, Japan researchers do not issue questionnaires for investigation, but find enthusiasts of mobile phone accessories, follow their lives closely with their consent, record the various behaviors of these consumers using mobile phones and accessories in their daily lives, and then analyze these behaviors to accurately find out consumers' demand preferences for mobile phone accessories. Some Chinese products such as "Nutri-Express" are not counted through questionnaires either, but that developers have noticed the phenomenon that Chinese office workers eat breakfast while rushing to work. They closely observe and track these consumers, deeply understand consumers' behaviors, and interpret that consumers need a kind of breakfast that can be eaten while they are walking and can satisfy all kinds of nutrition. Therefore, products such as "Nutri-Express", have been developed and rapidly popularized to meet the needs of many Chinese office workers (Wang and Shinobu, 2017).

In the research of consumer behaviors, there are researches on consumers' experience and pleasure in the process of consumption, and researches on how consumers manifest their self-concept and social identity through the possession of things. These researches adopt a variety of methods based on qualitative research.

Arnould and Thompson advocate that the core issues of these consumer behavior researches should be covered in a single term. They advocate to mainly study the social culture, experience and symbols of consumption in terms of content, to focus on qualitative research and advocate interpretivism in terms of research methods. They put forward the term "consumer culture theory" (Chin, Wang, and Liu, 2014). Arnould and Thompson also classified consumer culture theory, pointing out that the research mainly focuses on four themes, namely, consumer identity, market culture and social and historical patterns of consumption, ideology and consumer interpretation strategies in the mass media (Liu and Wang, 2013). For the texts obtained through interviews, one of the keys to analysis and interpretation is to identify the symbolic metaphors in the texts, i.e. the important assumptions, issues of concern, values and typical images or events of significance that are systematically presented throughout the interview (Zhu and Wang, 2009).

In the research of advertisement communication, positioning theory and IMC (Integrated Marketing Communication) are all based on interpretivism. In this field, it is found that there cannot be such a situation that all advertisements have the same meaning for all consumers. For example, the meaning of high-heeled shoes advertisements for women is completely different from that for men. The meaning of advertisements for consumers should be decided by consumers themselves (Chen, 2004). In addition, positioning theory studies how the audiences (consumers) accept advertisements from the standpoint of the audiences.

Integrated marketing communication theory studies how to communicate with consumers through various means, and the communication image and content of enterprises should be consistent. Moreover, integrated marketing communication pays attention to every consumer. In integrated marketing communication, it studies how to appeal for products in stories, how to use stories (situations) to reflect the value of commodities, and how enterprises and individual consumers communicate due to the progress of Internet technology (Wang, 2014).

Research based on interpretivism also includes research on experiential marketing, which refers to the marketing model that enterprises provide certain products and services to consumers based on the demand of customer and to create activities worthy of consumers' memories by arranging and designing events and scenarios in order to let consumers have internal reactions or psychological feelings and stimulate and satisfy consumers' experiential needs, so as to achieve the goal of enterprises. Researchers such as He-ping He and Yan-ni Liu divide "experience" in experiential marketing research into product experience, shopping and service experience, consumption experience and brand experience (He, Liu, and Chou, 2010). Product experience refers to the interactive experience between consumers and products, which runs through the whole process of consumers' search and evaluation of products. Shopping and service experience refers to the experience generated from interactions between consumers and the physical environment of stores and service personnel, etc. Consumption experience refers to the feelings generated when visiting museums, drifting, enjoying basketball games and other consumer processes. Brand experience refers to a subjective

internal (sensory, emotional, cognitive) and behavioral response triggered by brand-related stimuli. The experience first proposed by Holbrook and Hirschman actually refers to consumption experience and does not involve other experiences. However, with the deepening of research on experiential marketing, products, shopping, services and brands are all included in the research scope of experiential marketing.

Marketing research based on interpretivism has a larger scope of research more than the original one based on positivism. In the field of product development, it mainly focuses on how to generate new ideas through interaction with consumers. In the field of consumer behavior, it mainly studies "hedonic" consumption. In the field of advertisement communication, it mainly focuses on how to interact with consumers to generate new significances. It can be said that these studies all play a very good supplementary role to positivism research.

However, there are still some limitations such as too few samples, how to interpret consumer behaviors, how to judge a correct interpretation due to the subjective thinking of the observer, and that the theories of research are not universally applicable.

### **3. The third path of marketing research: critical realism**

#### **3.1 Basic Philosophy of Critical Realism**

From the above, it can be seen that positivism and interpretivism became confrontational. The positivists believe that all true knowledge is based on sensory experience and can only be advanced based on empirical observations, and that general regular statements are inducted on the basis of empirical observations of unbiased facts, and the natural science experiment is copied in social science. The interpretivists believe that the themes of natural sciences and social sciences are essentially different. The latter has unique characteristics such as pre-interpretation, conceptualization, and language games. The dichotomy or dualism based on nature and society suggests that the theme of social science is to clarify values, meanings, concepts, rules, etc. (Ma, 2012a).

Roy Bhaskar, a philosopher of science in the UK, pointed out the limitations of positivism and interpretivism. He argued that both methodologies have reverted ontology to epistemology and hence led to opposition. In the research based on ontology, Roy Bhaskar explored the third approach of philosophy of science, namely, critical realism (Ma, 2012a). Since its birth in the 1970s, critical realism has exerted a great influence on the study of social sciences (Wang, 2014). "Criticism" reflects the basic characteristics of realism philosophy.

"Realism" is the basic position of its philosophy, which shows that realism still belongs to the field of realism (Chang, 2014).

Critical realism defines ontology as an intransitive object of scientific research or other social practice. It considers ontology as the independent existence of a human cognitive activity or an established knowledge system and defines cognition as a scientific experiment or other social practice activity. The results are collectively called "knowledge" (Ma, 2012c). Critical realists insist that the world does not depend on the words that describe them, that the basic characteristics of the world are understandable, and that the world is a structured open system (Fu, 2011). According to critical realism, social reality is divided into three levels, namely experience level (refers to experience and phenomena), actual level (refers to events and situations), and real level (refers to structures, power, mechanisms, and trends). The first two levels are empirical "surface reality" and the third level is "deep reality" (Ma, 2012 c). The relationship between these three levels: the true level  $\geq$  the actual level  $\geq$  the experience level. There is no "simultaneity" or "synchronicity" between these levels, that is, people's observation in the experience level is not necessarily exactly the same as that in the actual level (Wu, 2012).

Critical realism's transcendence of positivism and interpretivism is embodied in five aspects (Ma, 2012c). First, it emphasizes the dependence of social relationships, structures, forces, and mechanisms on social practices, ideological concepts, and conditions of space and time. Second, it emphasizes that the research objects of social science include not only relations, structures, mechanisms, phenomena, and time, but also their beliefs, value judgments, and interpretations of meanings. Third, it emphasizes the causal interaction between research objects and research activities of social science. Fourth, it emphasizes the open system view of social science research and that social science has the function of "interpretative criticism" that natural science does



not have. Fifth, it emphasizes that the main purpose of critical realism is to integrate nature and social sciences (Huang, 2012).

Critical realists believe that in addition to a few systems such as the solar system, the various systems in the world are mostly "open systems." In an open system, the mechanisms of various things interact and interfere with each other. There are regular or fixed relationships between various events, which exist only in the "closed system" but not in the "open system" (Huang, 2012). According to this philosophical view, society itself is an open, complex, deeply layered system. Social phenomena include "dependency" such as behavior dependence, conception dependence, and space-time dependence. Therefore, social studies can only achieve "like law" and "semi-law" (Lu, 2015), that is, the factors constraining the socio-economic structure, strength, and mechanism include both environmental factors from the natural world, as well as social systems, traditions, customs, culture, and historical factors. In specific space-time conditions, it can still be seen that these factors present some rough, partial rules of experience (Ma, 2012 b). The so-called mechanism refers to the way in which things work. The mechanism does not exist in the structure of the thing itself, but in the structure composed of things (Ren and Zhao, 2009).

Critical realism emphasizes the openness of the system and it emphasizes that the purpose of the introduction of social science is to explain rather than predict. Critical realists oppose to the unconditional belief in the observed regularity and empirical examination, and advocate that scientists cannot obtain a definitive understanding of the existence of deep structures (Yuan, 2007).

After the summarization of the philosophical propositions of critical realism, the following points can be concluded: First, critical realists advocate that ontology exists objectively while epistemology is subjective.

Second, critical realists disagree with the positivist's view of science on the prediction of the constant linkage between things and propose to find out or explain the mechanism that causes constant linkage between things. Third, science, especially social science, is usually in an open system, so it is difficult to pursue so-called strict laws, but semi-laws can be pursued. Fourth, research objects of social science include beliefs and value judgments with functions of interpretation and criticism. Fifth, when applying social science, the concept of time should be introduced. The change from a certain phenomenon to another certain phenomenon can be illustrated with "social structure" and "human subject". The structure and the subject are symbiotic, and the structure is the precondition of the subject in terms of the time.

After critical realism was put forward, sociology, management, geography and other fields were studied, especially the field of economics. The critical realism methodology of economics has become one of the new directions for the development of Western economics methodology in the last 20 years (Ma, 2012 a).

Professor Lv Li in the field of management studies in China pointed out that according to the "semi-laws" proposed by Roy Bhaskar, since it is very difficult to obtain "strict laws" from management studies, then management theory lies in the fact that the system it constructs has changed people's management concepts.

The goal management, strategic management, SWOT analysis, management process control, etc. that are widely used in the management practice field are all from the creation of management experts, and have subsequently been accepted by a large number of management practitioners, becoming a concept and tool for people to think about management practices. This actually implies the "semi-laws" of the so-called "deep mechanism" of critical realism (Lu, 2015).

### **3.2 Inspiration of Critical Realism to Marketing Research**

What inspirations does critical realism bring to marketing research?

First, the marketing study is not to uncover the "constant rule" between the representations of things, nor to simply understand and explain social concepts and meanings, but to discover and explain the underlying mechanisms that cause representations of things to be constant.

Second, the marketing research can reveal semi-law or semi-regularity in all fields of marketing by introducing the concept of time.

The third point is that, in terms of research methods, a combination of quantitative and qualitative methods can be used, such as QCA (qualitative comparative analysis).

At present, research in the field of marketing based on critical realism has the following aspects:

In the field of new product research, there is, for example, the research on the innovation model of cultural products. QCA is used to study the innovation model of cultural products. It is found that different innovation models can be integrated through different combinations to promote product innovation. Innovation models include imitation innovation, demand-driven innovation, integrated innovation and open innovation. These four innovations are not contradictory to each other, and it requires collaborative efforts to achieve the ultimate success of innovation. Secondly, research also finds that the success of innovation depends on the integration of internal and external resources, and also takes into account the market demand. From the analysis results, the degree of utilization of internal and external resources is the key to determine the success of innovation. Therefore, it requires cultural products fully integrate internal and external resources to reach successful innovation when making innovation on cultural products. In the process of integration, special attention should be paid to the utilization rate of internal resources. At the same time, market demand should also be taken into account by the staff of cultural and creative industries (Fang, Zhang, and Fang, 2018).

In the brand research, the causes of green brand isolation are analyzed from the aspects of consumers, green brand rationality and reference groups. Through exploratory factor analysis and confirmatory factor analysis, the measurement scales of relevant variables and the influence relationship of each antecedent variable on green brand isolation are determined respectively. It is found that the rationality of green brand, the benefits of environmental protection function, consumers' awareness of environmental protection and information influence have significant negative impacts on green brand isolation. This paper explores the different combinations of antecedent variables produced by green brand isolation by using the qualitative comparative analysis method of fuzzy sets (Zhang and Sun, 2016).

In the field of advertisement communication research, there is a micro-mechanism that takes the network buzzwords generated by heated public events as the research object and uses qualitative comparative analysis to analyze its reason. The research refines six micro-factors influencing the Internet buzzwords, including the attributes of public events, the creator of buzzwords, the emotional expression mode of buzzwords, whether the buzzwords are adopted by the mainstream media, the emotional content expressed by the buzzwords and whether they contain public appeals (Zhou and Wang, 2016)

The method of consumer behavior research has so far included positivism research and interpretivism research. For example, in the national chain of men's clothing stores, it is possible to collect and analyze the data of hot selling clothes of different ages and the salesperson can also use this data as a reference to judge and interpret the consumers who enter the store with personal experience and makes the right recommendation for customers. Japanese Prof. Masanori Sakamoto argued that all consumers can be regarded as the "cause effect of structure" and the individual consumer can be regarded as "the causal effect of the subject." In the course of time development, the structure has undergone dynamic changes through the subject. By studying the changes, the "semi-regularity" of consumer behavior can be concluded (Wang and Sakamoto, 2018).

At present, there are relatively few researches based on critical realism. Through the joint application of quantitative and qualitative research methods, the limitations of these two approaches, positivism and interpretivism, are transcended, and product innovation model and advertisement communication mechanism and other aspects are studied. It is expected that such researches and future researches can reveal the "mechanism", "semi-law" or "semi-rule" in the field of marketing, which will bring more influence and provide more inspiration to the research in the academic and practical fields.

#### **4. Conclusion**

This study discussed three methodologies in the field of marketing: namely positivism, interpretivism, and critical realism. The positivism research methodology has always been the mainstream methodology in marketing. The interpretivism methodology was advocated to be applied to the field of consumer behavior research in the 1980s, and gradually applied to various aspects of marketing with the development of its research. Both of these methodologies have their limitations. The supporters of ontology and epistemology of

positivism advocate objectiveness and has been criticized. The supporters of ontology and epistemology of interpretivism advocate non-objectiveness, but their research is criticized because they are not universal. This paper argues that critical realism can be applied to marketing research. Critical realism is the unity and transcendence of positivism and interpretivism. Critical realists advocate objectiveness in ontology, but advocate subjectivity in epistemology. The research on social sciences is not limited to the phenomenon of experience, but it is considered to have deep structure and mechanism. For the discovery of deep structures and mechanisms, explanations are the ultimate goals of social science research. According to critical realism, marketing will broaden its field of research. It can be used to study deep structures and mechanisms in various fields and "semi-regularity". It has significant implications for revealing the ontology of marketing and the application of practice. Critical realism also has its limitations. First, its evaluation on philosophy is not comprehensive enough. Second, it faces the challenge of the holism of causality. Third, it faces criticism from specific disciplines. For example, the economist Hardin believes that there is no basic structure of a single, consistent social reality that critical realists put forward (Ma, 2012a). Due to my limited skills of research and the limited space of this paper, the presentation of the three methodologies is relatively simple and the development and debate between methodologies themselves are not involved in this paper. In addition, the marketing research based on critical realism is still relatively few, so researches collected and analyzed by the author is not much. Future study will focus on these issues.

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# PhD Research Papers



# Measuring the Perception of Knowledge Gained from Business Research Method Course

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**Abstract:** Business value today has been changed, the value is achieved when there are interactions between the resources (tangible and intangible) with the external environment. However, measuring and reporting intangibles are still an issue. The concept of intangibles is continually developed and passed into many stages. Last years the term intangibles have been replaced with intellectual capital. However, there are many challenges in understanding the concept of intellectual capital. Since intellectual capital is multidisciplinary field; each field of study has its own definition, measurement, theories and methodology. In this paper all these aspects are covered and illustrated.

**Keywords:** Intellectual capital; Innovation; Schumpeter's theory; Growth theory; Resources-based theory.

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## 1. Introduction

The business value is defined as the degree to which non-financial actions interact with financial resources to assist a firm in competing with market, attracting and maintaining customers, and gaining competitive advantage over others.

The resources based theory (RBT) explained how resources can be used to attain competitive advantage (Amit and Schoemaker, 1993). Wernerfelt (1984) defines resources as anything which strength or a weakness the firm. Barney (1991, p. 105) argued that resource is valuable if 'it takes advantage of opportunities and/or reduces threats in a firm's environment. Also, resource has been defined as valuable if it satisfied the customer needs (Bogner and Thomas, 1994; Verdin and Williamson, 1994) and if it enables a firm to conceive of or implement strategies that improve its efficiency and effectiveness' (Barney, 1991, p. 106). Conner (1991, p. 132) argues that resources are valuable when obtaining [above normal] returns.

In this paper we depend on this argument which is consistent within RBT (Aharoni, 1993; Prahalad and Hamel, 1990). This then leads to the question: how do firms make judgments about their value? How do stakeholders judge the extent to which a firm creates value?

In what follows we shall concentrate on how firms create value and how stakeholders can aware of these values.

### 1.1 Value creation process

The value creation process is shown in Figure 1, the external environment, including economic conditions, societal issues and environmental challenges, sets the context within which the firm operates. The mission and vision of the firms includes four components (strategy and resources allocation, risk and opportunities, performance and outlook). Those charged with governance are responsible for creating an appropriate oversight structure to support the ability of the firm to create value. The business model draws on various capitals as inputs, the input consists of six capitals categorized into tangible and intangible capitals; the tangible capitals are financial, manufactured and natural capital; the intangible capitals are human, social, and intellectual capital. The input through its business activities, converts them to outputs (products or services).

The firm's activities and its outputs lead to outcomes in terms of effects on the capitals. Outcomes are the internal and external consequences (positive and negative) for the capitals as a result of a firm's business activities and outputs. Continuous monitoring and analysis of the external environment help firms to identify their risks and opportunities. Both the firm and stakeholders need information about its performance, which involves setting up measurement and monitoring systems to provide information for decision-making.



To sum up, the value creation process is achieved when there are interactions between the resources (tangible and intangible) with the external environment. Now the question rose here, how these values can be disclosed?

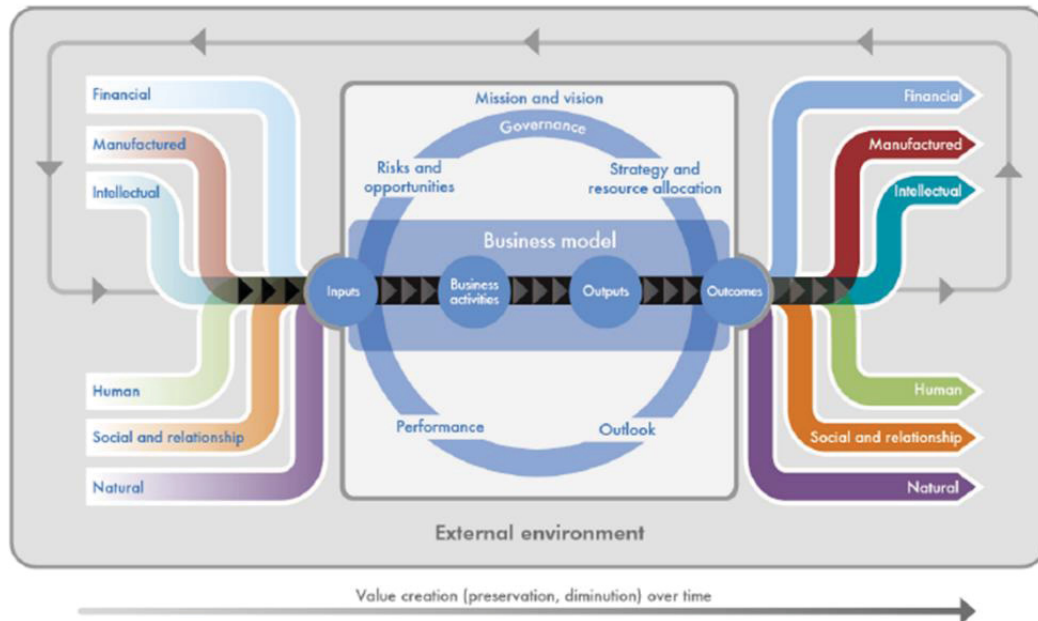


Figure 1: Value Creation Process

Source: IIRC, 2013

### 1.2 Value Reporting

In this study we assumed that effective value creation process implementation is a necessary, but not sufficient condition to achieve the outcome. Other contextual factors such as reporting are required for such success (Mousavizadeh et al., 2015).

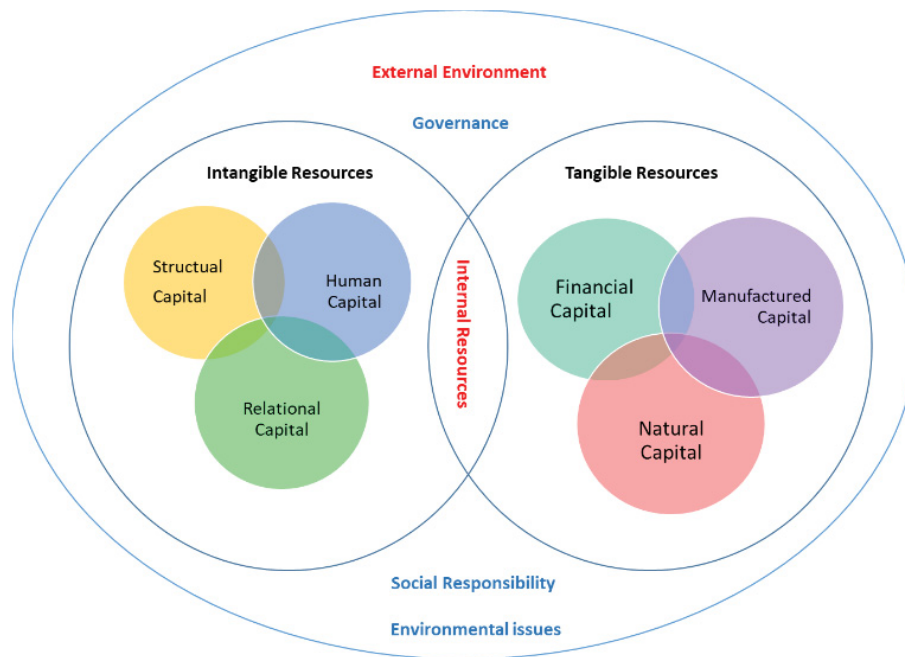
The fields of practice of value creation and its incorporation into reporting have grown rapidly over the last two decades. Practitioners, academics and management are struggling with increased interconnectivity between value creation, corporate reporting, and performance and the complexity that entails. The firms are addressing increased interconnectivity between external environment and internal resources (Orens et al., 2009). This increased the complexity and unpredictability of relationships between the three concepts which requires new theoretical and practical sights in order to move towards a more interacting model to value creation development (Unerman and Chapman, 2014). For this reason, scholars have called for a review of value creation insights and a development of new frameworks to enable the understanding of value creation today (Adams and Larrinaga-González, 2007; Adams and McNicholas, 2007;).

Two main concepts have to be considered while reporting on value; the internal resources and the external environment. The external environment exerts an influence on internal drivers (Harris, 2000); therefore, both internal and external environment needs to capture in order to measures the value of the firm. While the internal resources achieved through the interaction between tangible and intangible resources (Figure 2).

Value often builds in intangible assets, and that therefore the most pertinent form of value reporting is intangible assets (Bontis, 1998; Dumay, 2016; Petty & Guthrie, 2000). The intangible resources become a fundamental term to create value (Bowman and Ambrosini, 2000).

While the concept value is closely associated with the external environment and internal resources (tangible and intangible); the external environment can be disclosed easily following the Global Reporting Initiative (GRI) standards for sustainable reporting, the tangible resources can be explicitly disclosed since it follows the US GAAP, IFRS and the IAS. However, the challenges of value reporting appear in intangible resources since it has

no mandatory or unified reporting framework. Table (1) summarized the reporting framework in each part of value components.



**Figure 2:** Value Creation Components

**Table 1:** Business Value Components

Business Value	Reporting Framework
1- External Environment	GRI Framework
2- Internal Resources:	
A- Tangible Assets	GAAP, IAS and IFRS
B- Intangible Assets	No Framework

While the concept value is closely associated with the interest of shareholders, there are numerous stakeholder other than shareholders who are not looked at value creation as it is comprehend by shareholders. For example, Employees, customers, suppliers, creditors, decision makers, public authorities and different stakeholders keep track of different aspects of a firm’s activities and on disparate types of information. (e.g., Buchholz and Rosenthal, 2005; Laplume et al., 2008). Therefore, the information needs of shareholders and other stakeholders vary. To meet the needs of diverse stakeholders, various frameworks and disclosure forms have established over time. Wulf et al., (2014) and Dumay (2016) argues that financial reporting is not sufficient to meet the needs of stakeholders; further reports have been developed such as, intellectual capital statements, value reporting, corporate social responsibility (CSR) and sustainability reporting. These numerous reports confused the stakeholders and exhausted the firms. The overlap between these reporting frameworks and their ability to predict value delivered from intangible assets is difficult for stakeholders. Dumay (2016) and Flower (2015) debated that the reporting on value creation is continually debate for intangible resources. Therefore, in the following sections we will deeply discuss the intangible assets issues.

## 2. Intangible Assets

### 2.1 Historical Background and Development of Intangible Assets

Research into intangible assets has a long history. The first serious discussions and analyses of intangible assets emerged during the 1980s with the general idea of intangible assets –goodwill (Bone, 2006). Three years later, researchers have noticed the gap between book value and market value, the goodwill defined by accountants as the difference between the acquired price and the value of the acquired assets (Higson,1998). In most firms, the goodwill recorded as a fixed asset and amortized against income. However, some firms immediately ‘net-off’ the goodwill against equity to avoid the taxes. It was not until the mid-1980s that historians considered the gap worthy of scholarly attention. In late 1980s, there were attempts by researchers to fill the gap between

market value and book value through construct statements and accounts that called intellectual capital (Sveiby, 1988). Around the early 1990s, small-scale research defined Intellectual capital as the difference of a firm's market value and book value (Bontis, 1996; Sveiby, 1997; Edvinsson and Malone, 1997). In 1991, Dow Chemicals was the first company who published intellectual capital statement to represent the intangible value. After the publication of this statement, several authors wrote about the benefit of intellectual capital statement. These researches pushes the corporations to consider the role of manager in the intellectual capital, which brings legitimacy to the corporate. This legitimacy supported by Kaplan and Norton (1992) who introduces the concept of a balanced scorecard. The scorecard is about "what you measure is what you get".

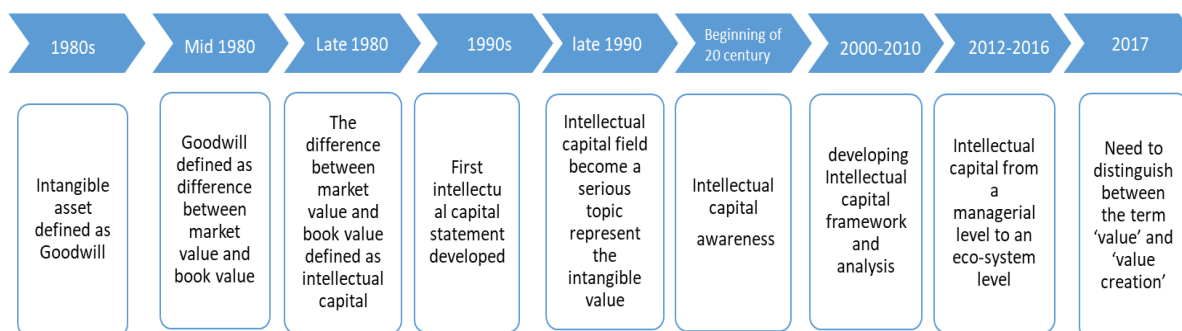
The balanced scorecard is a combination of financial and non-financial measures each compared to a 'target' value within a single report. The balance scorecard is not financial or operational reports but a summary that captures the value indirectly and provides a useful insight into corporation's strategy (e.g. mission, vision) (Shulver et al., 2001). By Mid-1990s, Nonaka and Takeuchi (1995) in their book "The Knowledge-creating Company" notes that there is variation between knowledge and intellectual capital. The difference is that intellectual capital statements helps implement strategies rather than describe historical results (Larsen et al., 1999). Late 1990s the intellectual capital field becomes a serious topic with scholars and academic which represent the intangible values (e.g. Bontis, 1996; Sveiby, 1997; Edvinsson and Malone, 1997). By the beginning of 20 centuries, Petty and Guthrie (2000) initiate the first and second intellectual capital stage research; the aim of this stage is to raising Intellectual capital awareness. In their study, they show the developments of intellectual capital through the filter and analysis of intellectual capital research. They review the most important literature on intellectual capital and concentrate on significant theoretical and empirical contributions relating to the measurement of intellectual capital. The study concludes that there is need to improved understanding of how and why firms develop their intellectual capital? Who are the users? What decisions would they like to make? The findings of this research provide insights for the researchers to make meaningful contributions that are theoretical, methodological, or empirical in nature. Twelve years later, Guthrie et al. (2012) developed the third stage research; the purpose of this stage is to create framework (guidelines and standards) to measure, manage, and report Intellectual capital. This research has thrown up many questions in need of further investigation; e.g. employ innovative intellectual capital methodologies, experiment with the novel practices and to apply more empirical researches of intellectual capital that are help develop more innovative theoretical research. This study has three contributions; the first contribution is to identify the field of path associated with Intellectual capital research, the second is to provide a full picture of what happened in the intellectual capital field, the third is it gives evidence about how and why the intellectual capital research has changed. The fourth stage of intellectual capital research comes one year later than the third stage; Dumay and Garanina (2013) initiate this stage with aim to analyse intellectual capital in critical and performative methods. The authors argue that there is an increasing in intellectual capital performative research however, the researches remains stuck in an ostensive approach. As noticed in this stage, there is lack of adequate researches building new frameworks, most of these researches are stuck in "How IC works" using the praxis of intellectual capital. This stage has raised important questions about the nature of practical intellectual capital research; Does these researches attempts to measure intellectual capital in order to define its value? More research needed to break free from the dominance of "accounting" practice before they can understand and realise the value of intellectual capital, giving researchers the ability to reflect on the impact of intellectual capital to inform future praxis. The contribution of this stage of intellectual capital research is to create a continued discourse about intellectual capital practices and develop intellectual capital theory that linked to practice and aligned it with the development of economy to create effective intellectual capital management through praxis. Attention that is more recent has focused on the fifth stage of intellectual capital research. Guthrie et al. (2017) in their book, for the first time, introduce the fifth stage of intellectual capital research. The aim of the fifth stage is to develop intellectual capital research with no limits. This stage focuses on the role of intellectual capital in firms and between firms and beyond". In recent years, there has been an increasing amount of intellectual capital research that trying to cut the edge areas from a variety of perspectives. The stage question arises in this stage "Is managing intellectual capital a worthwhile endeavour?" Arguably, asking this question removes limits for value measurement. Therefore, there is need to reconcile "the worth of intellectual capital to different people in different contexts and respecting that there will always be differences and that one view should not always prevail" (Dumay et al., 2017b). To do this we have to go through IC stages

## 2.2 Stages of Intellectual Capital

The first stage of intellectual capital research has been focused on increasing the awareness about the importance of realizing and understanding the role of intellectual capital in developing and managing a sustainable competitive advantage. The aim of this stage was to disclose the invisible values of the firms. Many historians have argued that there is need to understand intellectual capital better (Guthrie and Petty, 2000; Sveiby, 1998). We believe the historical perspective is fundamental in supporting an understanding of the intellectual capital context today. Although this may be true, the studies that aim at understand the concept of intellectual capital have recognised the importance of intellectual capital in limited period (1980- 2000). For many years, researchers surprisingly neglected this stage and moving to the second stage.

The second stage of intellectual capital shifted from understanding the importance of intellectual capital to create framework (guidelines and standards) to measure, manage, and report Intellectual capital. The endeavor was to investigate the value of intellectual capital in practice. The efforts in this stage move from answer the question "why, what, and, where" creating an understanding of the intellectual capital to Investigate the "how" intellectual capital are measuring and managing inside the firm (Petty and Guthrie, 2000). However, the "how" is likely answer the question in the short term. This leaves a question about Investigate the "how" intellectual capital are measuring and managing in the long run. Which pushes the researchers to find a way to broader the viability of intellectual capital measurement and management.

The third stage of intellectual capital concentrates on critical and performative analysis of intellectual capital, this stage attempt to broader the second stage of intellectual capital by answer questions "how" and "why" critical and performative analysis of intellectual capital are practices. Guthrie et al. (2012) provides in-depth analysis of stage three seeking to obtain data that will helps to address this stage gaps. The first gap found in this stage is the generalization of the results, most intellectual capital research tries to generalise findings across all firms instead of looking at the practice of intellectual capital from within a firm. Thus, the approaches to measure intellectual capital offered in this stage provide customized finding about how intellectual capital implemented in practice inside the firm (Dumay, 2009). Second, the most researchers focused on publicly listed companies with very little studies on private sectors (Ghosh & Wu, 2007; Mavridis, 2005)



**Figure 3:** Development of Intangible Assets

Source: Author

Third, most of intellectual capital research are adopted in Europe, Australia, North America and United Kingdom. Although this stage focuses on developed countries, the findings may well have a bearing on developing countries. Fourth, the third stage of intellectual capital is theoretical studies, whilst there are few studies that link theory with empirics (Guthrie et al., 2012). The final gap found in this stage is that intellectual capital researcher does not consider the existing intellectual capital framework when they researching. The third stage addressing neglected challenge for more innovative methodologies that provide empirical research of intellectual capital and linked with develop expansive theoretical research. Therefore, there are still many unanswered questions about the intellectual capital measurement.

The fourth stage argues that there are many performative researches adopted in intellectual capital field however these researches are evaluative nature (Olson et al., 2001) and stuck in an ostensive approach (Mouritsen, 2006). In this stage, there are diverse and broad intellectual capital frameworks which reached to over 100 frameworks (Pike and Roos, 2007). However, the diversity lead to disarrangement about what is the

valid framework (Ghemawat, 2002). Thereupon new intellectual capital framework expected to be continually evolve from an ostensive perspective as the economy developed, to cope with the economic, social and eco-system development. Adams and Simnett (2011), outline a critical role for Integrated Reporting as a new accounting disclosure that considers the financial, non-financial and eco-system value drivers for today’s organisations. The historians have argued that Integrated Reporting “is poised to be a mainstream reporting evolution and represents an opportunity for improving transparency, governance and decision making for all kind of organisations. This, in turn, will improve the decision making of long-term investors and funders”. Thus there are endeavor for new intellectual capital frameworks that understand and recognize the potential of intellectual capital before applying accounting practices (Dumay and Garanina, 2013) . There are other wider perspectives on the intellectual capital development (i.e. intellectual capital of nations perspective rather than specific firms). This perspective shifts the focus of intellectual capital from a managerial level to an eco-system level (Edvinsson, 2008). Those arguments boost the researchers to continue develops Intellectual capital frameworks considering managerial level alongside with eco-system level. This moves the researchers the fifth stage of intellectual capital.

The fifth stage of intellectual capital initiated by Dumay et al. (2017a), the issue appears in this stage as noted by Dumay et al. (2017a) is the need to distinguish between the term ‘value’ and ‘value creation’, the two terms are not defined well (Bowman and Ambrosini, 2000). The ‘value creation’ defined by Stewart and Ruckdeschel (1998) as the ability for intellectual capital to ‘create wealth’. In current intellectual capital research, Dumay (2016) redefines the term value as “monetary, utility, social and sustainable value”, which is aligning with the current emphasis on third stage performative intellectual capital (Guthrie et al., 2012) and the fourth stage ecosystem approach (Dumay and Garanina, 2013). In this stage, Dumay et al. (2017a) recognize the need to reframe the general research question of “What is IC worth to investors, customers, society and the environment?” to “Is managing intellectual capital a worthwhile endeavour?”. Although, there are still researchers who look at intellectual capital as creating wealth for investors and shareholders (Lev and Gu, 2016), there is a broader value creation including further stakeholders. Thus, this stage need to reconcile “the worth of intellectual capital to different people in different contexts and respecting that there will always be differences and that one view should not always prevail” (Dumay et al., 2017a).

A recent systematic literature review believed that no one stage is more important than the others. However, the intellectual capital research attempting to focus on each stage separately. For example:

- Stage one (De Villiers et al., 2017b).
- Stage two (Roos, 2017; Dane-Nielsen and Nielsen, 2017; Nielsen et al., 2017; Kianto et al., 2017).
- Stage three (Ritvanen and Sveiby’s, 2017; Rooney et al., 2017; Montemari and Chiocchi, 2017).
- Stage four (Elia et al., 2017.; Samkin and Schneider, 2017; Cavicchi & Vagnoni, 2017).
- Stage five (Dumay et al., 2017; Roslender and Monk, 2017).

Dumay et al. (2017) stated that the five stages are interconnected not sequential; therefore, it is needful to consider all stages of research in a single research to structure a new knowledge and bridge the gap that appears in each stage.

Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
<ul style="list-style-type: none"> <li>• Focus on increasing the awareness about the importance of the intellectual capital</li> </ul>	<ul style="list-style-type: none"> <li>• Create framework to measure, manage, and report Intellectual capital</li> </ul>	<ul style="list-style-type: none"> <li>• Concentrate on critical and performative analysis of intellectual capital</li> </ul>	<ul style="list-style-type: none"> <li>• Shift the focus of intellectual capital from a managerial level to an eco-system level</li> </ul>	<ul style="list-style-type: none"> <li>• Ability of intellectual capital to ‘create value to different people in different contexts</li> </ul>

**Figure 4:** Stages of Intellectual Capital

**Source:** Author

### 2.3 Challenges of Intellectual Capital

There is no unified accepted definition of intellectual capital (Dumay, 2014; Wang et al., 2016) despite the significant of intellectual capital as a source for creating value and as driver for achieving business goal (Striukova et al., 2008). In this paper we use the redefinition of intellectual capital as proposed by Dumay’s (2016, p. 169), intellectual capital is ‘the sum of everything everybody in a company knows that gives it a

competitive edge . . . Intellectual capital is intellectual material, knowledge, experience, intellectual property, information . . . that can be put to use to create value’.

It is clear that the intellectual capital notion become a fundamental term to capture and transfer value (Bowman and Ambrosini, 2000). There are many models developed to evaluate and report intellectual capital (i.e. Balanced Scorecard by Kaplan and Norton ,1992; Skandia intellectual capital model by Edvinsson). These models include various components of intellectual capital.

However, none of the models is better than others, all of them are carefully structured, whilst the historians have agreed that intellectual capital classified into three components: human, structural and relational capital.

Also three significant components of intellectual capital have been identified in the literature. These are human capital, structural capital and relational capital (Bontis, 1998). Human capital (HC) is associated with the employees’ tacit or explicit knowledge, and their ability to provide useful knowledge for the firm. HC also includes individual values, attitudes, behaviours, education, experiences and competencies (Martín-de-Castro et al., 2011). Employee Creativity, satisfaction, loyalty and motivation, formal training and education also considered as human capital (Fernández et al., 2000). HC is recognized as firms’ most valuable asset for firms (Curado et al., 2011; Guthrie et al., 2012). Structural capital (SC) is defined as explicit knowledge that has been internalized by the firm. The structural capital consists of organizational culture and the organizational structure. The organizational culture refers to values generated from effective use of information and technologies. However, the organizational structure is related to the formal techniques used to organize the firm (Delgado-Verde et al., 2011). Structural capital often support employees to reach the optimum intellectual performance (Mouritsen & Roslender, 2009). Relational capital (RC) is the knowledge that is derived from a firm’s relationships. This capital consists of internal and external relationship (Inkinen, 2015). RC is an asset that builds in the social relationships among individuals, communities or society (Tsai & Ghoshal, 1998).

However, integrating them to create value is a complex process. The complexity of value creation appears in different situations: First, intellectual capital can be used at one time through multiple ways. To illustrate, technology owned by one employee can be shared with different departments in one firm. On the other hand, the activities of a firm may provide different intellectual capital altogether (Itami et al., 1991). Second, no one intellectual capital, but rather a collection of intellectual capitals creates value for the firms and competitive advantage (Ricceri, 2008). Hence, there is gap in integrating the intellectual capital components in the models to create value. Ricceri (2008) realized that strategy formulation and execution can linked the intellectual capital components to value creation. A well strategy that considering the changing in business (internal resources) and economic environment (external environment) need a comprehensive approach to implement the strategy that can create the full potential of value (Itami et al., 1991). However, Dumay (2012) states that focusing on good strategies is not sufficient to know the link between intellectual capital and value creation, In the same vein, de Pablos et al. (2014 p.297) in their book “Intellectual Capital in Organizations: Non-Financial Reports and Accounts” gives an example about how other component than good strategies affect the intellectual capital and value creation. “Same staff, if working in different organizational cultures, will have different motivations and different behaviours”. Giving these points, firms that encourages innovation will stimulate the new business models, whereas firms with discourages innovation may prevent new business models even with the same sources and employee. Therefore, it is hard to link intellectual capital to strategy for value creation. Markides (2013) argues that to create value business model must use interchangeably with strategy. Bock et al. (2012) clarify the difference between strategy and business model, they stated that a “business model is the organization’s configurational enactment of a specific opportunity, whereas strategy is the process of optimizing the effectiveness of that configuration, including the potential to change the configuration, alter the underlying opportunity or seek out new opportunities”. This means that, if a business model illustrates the present situation of the firm, the strategy should illustrate the future. However, firms face a challenge on capture intellectual capital value from present (business model) and future (strategy).

Although there are progresses in intellectual capital value capturing, there are also disappointing trends, the reasons behind that may be the interest to hide the firm innovation secrets (de Pablos et al.,2014.). Recently, Rooney and Dumay (2017) found that there are quantitative intellectual capital frameworks but without considers the relationship between intellectual capital components and innovation driven by the strategy to

capture the future intellectual capital value from strategic outcomes. In addition, they highlights the need to critically analyse past innovation policies driven by business model in achieving national and international economic goals. By the same token, Yao and Koga (2017) argued that intellectual capital can provide competitive advantage by strategy (Future) and practical implications (business model). More recent attention has focused on the provision of integrated report in create the future value matching with current value. De Villiers et al.(2017b) discuss the relationship between intellectual capital and integrated reporting, they state that integrated reporting encompass of financial and non-financial value in a single report. Furthermore, they point out that firm's strategy, business model, and the six capitals (financial, manufactured, intellectual, human, social and relationship, and natural capital) together are available in the integrating report which helps the firms and stakeholders to measure and analyses the intellectual capital from future value (strategy) and current value (business model). Therefore, we have to clearly discuss the intellectual capital from different angles and how these perspectives can together measure and disclose in order to create value.

### **3. Conclusion**

No one can deny that intellectual capital has today become one of the most important assets of the firm and that the investment increase in intellectual capital leads to a rise in firm value. Now the attention is switched to the processes inside the firm that create value. Tangible resources purchased as inputs. The inputs itself in the production process needs an intervention of human to create values. The same things apply to intangible resources like information and brands. Information does not add value by themselves; they have to be associated with other resources. Similar to tangible resources, the intangible resource like information could be used to create value in the eyes of stakeholders. However, value creation derives only when stakeholders aware of it (Lado and Wilson, 1994).

The RBT argues that intangible resources such as human and culture are the sources of above normal returns (Castanias and Helfat, 1991; Wernerfelt, 1989). This suggests that the firm's competitive advantage derived from intangible resources within the firm. Tsoukas (1996) and Grant (1996) argued that value is created only when tangible and intangible resources are interacting.

The main aim of this paper was to provide theoretical explanation about business value today. The paper started firstly discuss how value is created, the process of value creation and how these values are reported. There are wide debates about reporting the intangibles. Measuring and reporting intangibles are still an issue. As well as, there are many challenges in understanding the concept of intellectual capital which is represents the intangible value.

Since intellectual capital is multidisciplinary field; this paper discusses the definition, measurement, theories and methodology from different perspectives (economic, strategic, finance and marketing). This discussion enables the academics, stakeholders and policy makers to understand intellectual capital (which is an essential part of business value) from different angles.

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# The Role of HRM as an Enabler of Creativity: Initial Research Findings

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**Abstract:** This paper investigates the strategic role of HRM as a facilitator of more creative behaviours amongst employees. Although creativity has broadly been recognised as an essential ingredient of long-term organisational success (Aleksić et al, 2016; Curado, 2017), evidence suggests that much remains hidden in the current state of research (Martin and Wilson, 2017). For instance, it is still unclear whether and how creativity enhancing strategies can reduce the negative effect of less creative behaviours of employees on their performance and overall organisational effectiveness. The scant research to date highlights that certain Human Resource Development (HRD) interventions can evoke an opportunity of organisational and personal growth, due to developing and unleashing untapped human expertise (Gilley et al, 2011). However, no previous work has empirically tested the fit between strategic HRD and individual creative behaviours (Loewenberger, 2016). This paper adopts a mixed method research design, demonstrating a more inclusive approach to the challenge of human creativity at work. By encouraging participants to complete a multi-faceted self-assessment tool and engage in creative HRD interventions (workshop) we aim to detect changes in individual creative behaviour. Quantitative data is based on analysis of individual responses to the self-assessment tool, and qualitative data emerges from the workshop. The preliminary results of the pilot study suggest that participants find such a research approach a useful exercise, contributory to their creative thinking. As a result of the study, a model of creativity will be generated, grounded on the insights from the dynamic componential model of creativity (Amabile and Pratt, 2016), the model of creative problem-solving (Treffinger et al, 2008), and the concept of human flourishing (McCormack and Titchen, 2014). A complex self-assessment tool will be developed, allowing for the simultaneous and in-depth evaluation of various creativity-related parameters: personality traits, self-concept characteristics, and perceptions of the work environment. Research findings will be published in 3-star journals and a PhD thesis.

**Keywords:** employee creativity, creative behaviour, HRD intervention, mixed method

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## 1. Background

An emerging number of studies confirm that human creativity is a critical intangible resource, helping modern organisations survive and succeed in turbulent changing environments (Aleksić et al, 2016; Curado, 2017). Joo et al (2013) outline that through promoting and utilising individual creative effort, organisations are capable of creating “blue oceans” in the untapped market place, allowing them to enhance competitive advantage and denote to long-term existence.

Research on creativity has increased over a few decades. The literature informs on the structure of creativity-related individual traits and characteristics, as well as mechanisms to enhance creative skills (Wang and Nickerson, 2017; Doran and Ryan, 2017; LeBoutillier and Barry, 2018). A recent shift towards employee-driven innovation supports the importance of creative employees, to contribute to organisational success from the bottom up via their creative-thinking (Amundsen et al, 2014; Smith, 2017). Despite research efforts, the problem of creative variety and the uneven distribution of individual creative potential remains beyond the scope of many contemporary creativity researchers, who believe that all employees can be creative with the capacity to develop something new (Aasen et al, 2012). The contrasting observations by Hon and Lui (2016) suggest that several psychological or habitual determinants can prevent employees from being creative and thereby affect the quality and quantity of creative outcomes.

In this paper, creativity is understood as “the novel and personally meaningful interpretation of experiences, actions and events” (Beghetto and Kaufman, 2007; in Kaufman and Beghetto, 2009, p. 3), in which “the non-expert may participate each day” (Richards et al, 1988; cited in Kaufman and Beghetto, 2009). Such a view on creativity illustrates a wide distribution of creative potential in organisations and deals with the malleable character of creativity, meaning that training in creative thinking may result in positive shifts in creative cognitive styles and attitudes towards its utilisation (Min et al, 2016).

The essence of individual creativity is explained by “hard core personality traits” and “surface self-concept characteristics” (Karwowski and Lebuda, 2015). The former are related to personality factors, which are based on genetic differences and less receptive to contextual changes (Karwowski, 2012). They include such traits as neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness (Costa and McCrae, 1992). Surface self-concept characteristics are results of hard-core personality traits. They are less stable, yet more open to changes and environmental influences (Karwowski and Lebuda, 2015). Among such traits is creative self-efficacy (CSE), a most influential force on individual perceptions of creative potential (Tierney et al, 2002; Meinel et al, 2018) and actual involvement in creative behaviours.

A combination of traits and skills may not necessarily result in actual creativity, as it can be influenced by unforeseen forces (Shalley et al., 2004). For instance, some individuals may actively use their potential and behave creatively at work, while others may find it hard to reflect creativity, despite their inherent creative potential. This may be explained by general low self-reported views on individual creativity (Hon and Lui, 2016). In addition, a lack of creativity-related training and development (Somsing and Belbaly, 2017) and creative inhibiting working environment may lead to decreased engagement in creative problem solving (Gevers and Demerouti, 2013). However, the evidence in support of the aforementioned remains scarce, a gap this research aims to address.

In this paper, the challenge of human creativity is examined in the strategic Human Resource Development (HRD) – creativity nexus. Strategic HRD refers to the concepts of skills acquisition and self-actualisation (McGuire and Jorgesen, 2010) and is related to creativity in the area of training and development (Joo, 2013).

Existing HRD research demonstrates that the application of HRD practices can equip employees with necessary skills and knowledge to promote creative thinking across all organisational levels (Gilley et al, 2011; Joo et al, 2013; Loewenberger, 2013; Sheehan et al, 2014). HRD can also create a supportive climate for creativity by enhancing commitment to creative endeavours, contributing to a shared understanding of the strategic role and value of creativity, promoting learning and creative development (Heffernan et al, 2016), but the evidence is scarce. From the current literature gaps the following research question is worthy of investigation:

**Research Question:** What is the link between HRD and individual levels of creativity?

## **2. Method**

### **2.1 Research design**

Referring to Leech and Onwuegbuzie’s typology (2009), a fully mixed sequential dominant status research design is used in this paper. Such design means conducting a research study that involves mixing qualitative and quantitative methods within one or more stages of research. In the paper, the qualitative and quantitative approaches are mixed within the data collection, data analysis and data interpretation stages, where qualitative and quantitative phases occur sequentially with a greater emphasis placed on the qualitative stage (Onwuegbuzie et al, 2007; Saunders et al, 2016).

In this paper, qualitative data is first collected and analysed, the underlying themes are recognised and drive the development of a quantitative tool helping to further explore the research problem (Onwuegbuzie et al, 2007; Creswell and Plano Clark, 2011). Related to this, three stages of data analyses are addressed in the paper: after the initial qualitative phase, after the quantitative stage, and at the integration stage that merges results of the two streams of data and formulates the findings (Berman, 2017).

The micro- and macro-levels of reference are addressed in the study (Sitzmann and Weinhardt, 2018). The former investigates processes occurring within the individual (i.e. changes within a person throughout the whole training process). The macro-level examines the organisational culture, the creative climate.

### **2.2 Participants**

This paper refers to a small sample of participants (N=30) who took part in the pilot study. The pilot study focused on the examination of validity and reliability of both qualitative and quantitative methods of research.

#### *2.2.1 Qualitative phase*

The qualitative data was collected during a creativity intervention, delivered in November 2018 as part of an Economic and Social Research Council (ESRC) sponsored event, the Festival of Social Science Northern Ireland.

The event was open to all people interested in the topic. The group comprised of nine participants, including four women and five men. The participants came from both academic and work-related sectors around the Belfast area.

### *2.2.2 Quantitative phase*

The sample was represented by 60 participants, who voluntarily agreed to take part in the pilot study. The group consisted of respondents from both academic and work-related sectors and included 21 professionals, 9 event participants, and 30 Master of Science (MSc) students from Ulster University. Of 60 participants, 23 respondents (38%) returned the forms: 18 professionals, 2 event participants and 3 MSc students.

## **2.3 Measures**

For the purpose of this research, a quantitative instrument (a multi-faceted self-assessment tool) is developed, consisting of the three underlying constructs: hard-core personality traits, surface self-concept characteristics, and perceptions of the work environment. The items are all rated using a 5-point Likert scale).

Personality traits are measured using a 23-item scale, developed by Costa and McCrae (1992) but adapted to the needs of the research by incorporating job-specific context. Self-concept characteristics are measured using a 5-item scale, which includes constructs from previous research by Tierney and Farmer (2002), Zhou and George (2001).

The role of the working environment on human creativity is measured using the KEYS® to Creativity and Innovation instrument (Amabile et al., 1996). Only specific items from each of the dimensions of the instrument are selected and included in the self-assessment tool, in order not to overload research participants with the number of research constructs.

## **2.4 Procedure**

The creativity intervention reflected a one-hour creativity workshop. It was based on the model of creative-problem solving (Treffinger et al, 2008) and involved several interconnected stages: introduction to the tool/topic, understanding of the challenge, generating ideas, preparing for actions, and approach planning.

During the event, the creativity technique “Circle of Opportunity” was chosen and implemented, aimed to initiate and encourage creative thinking processes (Michalko, 2006). The first author acted as a workshop facilitator and guided participants through the stages of the activity/creative challenge. At the end of the workshop, participants were invited to present and discuss their creative solutions to the challenge. After the event, feedback on individual creative behaviour was gathered, and workshop participants were encouraged to take part in the quantitative aspect of research.

A link to an online version of quantitative instrument was sent to workshop participants, professionals, and MSc students. The confidentiality of responses was ensured. The participation was optional, and responses were used for feedback purposes only. The response rates were at levels of 85.7% for professionals, 22.2% for event participants, and 10% for MSc students.

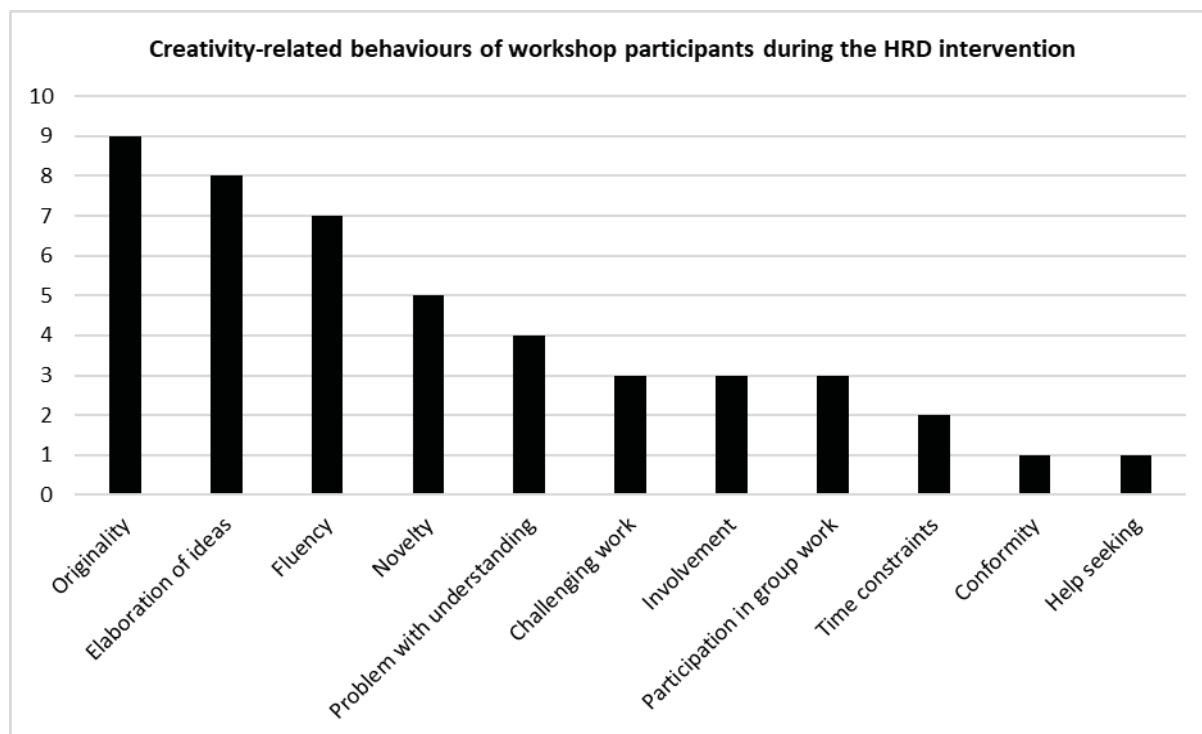
## **3. Data analysis and results**

### **3.1 Stage 1**

The qualitative stage of data analysis involves discourse analysis of naturally occurring talk with participants of the workshop (N=9). The analysis referred to observations of behaviours and conversations (recorded in note format), as well as interactions with event participants after the workshop. To perform the analysis and understand the process of creativity development, the audience was divided into equally sized groups. Precise attention was awarded to both verbal and non-verbal language, the former was considered the medium for interaction, the latter as an indicator of what people actually did and how well they performed (Stanley and Crane, 2016).

Discourse analysis is based on the constructionist model allowing for the structural organisation of meanings (Cameron, 2009). The words and behaviours are translated into themes, the codes are abbreviated and analysed using NVivo 12.2. The results of discourse analysis are exported into MS Excel to represent the

patterns visually and select the frequently used themes for the further steps of data analysis. According to the Figure 1, such themes refer to “originality”, “elaboration of ideas”, and “fluency” of participants’ behaviours. This confirms results of previous studies suggesting that creativity trainings and interventions are able to initiate and encourage higher-level executive abilities, including fluency (Bott et al, 2014; Byrge and Tang, 2015), elaboration and originality (Byrge and Tang, 2015; Morin et al, 2018).



**Figure 1:** Creativity-related behaviours of participants of the creativity workshop

The results of discourse analysis are further translated into new categories for the quantitative phase of research. Using evidence from previous research, originality (Byrge and Tang, 2015; Gupta and Banarjee, 2016; So and Joo, 2017), fluency (Byrge and Tang, 2015; So and Joo, 2017; Meinel et al, 2018), and elaboration (Byrge and Tang, 2015; Dong et al, 2017; Meinel et al, 2018) are explored in the context of hard-core personality traits and surface self-concept characteristics. The job-relevant context is added to gain deeper insight of individual creative thinking at work and increase criterion-related validity and reliability of the quantitative instrument (Pace and Brannick, 2010).

### 3.2 Stage 2

To examine the reliability of the quantitative instrument, Cronbach’s alpha coefficient is employed. The coefficient indicates the degree to which the constructs within a factor are interconnected (Onwuegbuzie et al, 2007). The results of the reliability analysis are found in Table 1.

**Table 1:** Results of Reliability Analysis

Constructs	Number of constructs	Cronbach’s alpha $\alpha$	Cronbach’s alpha $\alpha$ on Standardised items
Openness to experience in the job-relevant context	6	0.63	.64
Conscientiousness in the job-relevant context	5	0.47	.52
Extraversion in the job-relevant context	4	0.44	.45
Agreeableness in the job-relevant context	2	0.26	.28
Neuroticism in the job-relevant context	5	0.61	.59
Creativity-related self-concept characteristics	7	0.82	.85
KEYS® to Creativity and Innovation	23	0.87	.89

The overall fit outlines a poor to very good internal consistency, with a Cronbach’s alpha coefficients ranging from .26 to .86. According to Costa and McCrae (1992), the reliabilities of the scales measuring general hard-core personality traits demonstrate a very good internal consistency, ranging from .86 (Agreeableness) to .92 (Neuroticism). Previous research confirmed that the constructs hang together as stable and reliable

personality factors, creativity studies however argued that general Openness to experience was among the only constructs most consistently related to human creativity (Shalley et al, 2004; Furnham and Bachtiar, 2008; Binyamin and Carmeli, 2017). To get more indicative comprehension of individual creative behaviours at work, the job-relevant context is added to personality traits (Pace and Brannick, 2010). Although this lowered the general internal consistency of the tool, the results should be treated with caution considering the small sample size.

Internal consistency of the instrument measuring creativity-related self-concept characteristics has found to be good in previous studies, with a Cronbach’s alpha coefficient reported at levels of .74 (Time 1) and .81 (Time 2) (Tierney and Farmer, 2002), as well as .92 (Zhou and George, 2001). In the current study, the Cronbach’s alpha coefficient equals to .82, meaning a very good internal consistency of the constructs within the scale.

According to Amabile (1996), the KEYS® to Creativity and Innovation instrument has a very good internal consistency, with a Cronbach’s alpha coefficient reported of .85. In this paper, the preselected constructs from the instrument indicate a better internal consistency, with the Cronbach’s alpha coefficient of .87.

To increase the internal consistency of the scale measuring hard-core personality traits in the job-specific context, the items with a “Cronbach’s alpha if item deleted” coefficient higher than the final Cronbach’s alpha coefficient are removed. The Table 2 demonstrates the new results meaning a stronger relationship among the constructs.

**Table 2:** Results of Reliability Analysis for the personality traits

Themes	Number of constructs	Cronbach’s alpha α	Cronbach’s alpha α on Standardised items
Openness to experience in the job-relevant context	5	0.64	.67
Conscientiousness in the job-relevant context	4	0.70	.73
Extraversion in the job-relevant context	3	0.50	.52
Agreeableness in the job-relevant context	2	0.26	.28
Neuroticism in the job-relevant context	4	0.66	.65

Recommendations of Pallant (2013) suggest the scales with less than ten constructs can be considered reliable if the Cronbach’s alpha coefficient equals to .5. Following the notice, all the scales except for “Agreeableness in the job-relevant context” have passed the reliability test and are accepted for subsequent analyses. The inter-item correlation of the constructs within the scales have also demonstrated good reliability, showing the medium to large strength of the relationship (Cohen, 1988).

The Pearson product-moment correlation is used to identify the strength of the relationships between the variables. Table 3 illustrates descriptive statistics and correlations for the study variables.

**Table 3:** Results of Descriptive Statistics and Correlations

VAR	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
OPE	3.63	.65	—												
CNS	4.28	.69	.48	—											
EXT	3.81	.49	.35	.54**	—										
NE	2.21	.88	-.25	-.55**	-.31	—									
SCC	4.25	.64	.66**	.25	.55**	-.38	—								
FRD	4.22	.99	-.08	.09	-.02	.01	-.13	—							
CHL	4.35	.66	.11	.23	.45	.09	-.07	.02	—						
ME	4.04	.84	-.24	.08	.13	-.07	.05	.21	.01	—					
GS	4.01	.73	-.19	-.00	-.20	.04	-.09	-.11	.14	.45*	—				
OE	3.98	.73	.16	.06	.14	.04	.16	.25	.37	.62**	.52*	—			
OI	3.00	1.28	-.34	-.14	-.51*	.01	-.41*	.07	-.11	.04	.34	.19	—		
SR	4.22	.90	-.19	-.27	-.12	.01	-.35	.45*	.09	.59**	.11	.48*	.19	—	
WP	3.26	1.21	-.38	-.11	.04	.24	-.30	-.12	.11	.17	.28	.19	.44*	.07	—
CR	3.83	.72	.21	-.02	.24	-.00	.17	.24	.26	.24	.34	.57**	.13	.39	.26

Note: N = 23; \* $p < .05$ ; \*\* $p < .001$  for all two-tailed correlations. VAR – Variable; OPE – Openness to experience; CNS – Conscientiousness; EXT – Extraversion; NEU – Neuroticism; SCC – Self-concept characteristics; FRD – Freedom; CHL – Challenging work; ME – Managerial encouragement; GS – Work group support; OE – Organisational encouragement; OI – Lack of organisational impediments; SFR – Sufficient resources; RWP – Realistic workload pressure; CR - Creativity

The results suggest that Openness to experience in the job-related context ( $r = .66, p < .001$ ) and Extraversion in the job-related context ( $r = -.55, p < .001$ ) are strongly related to individual creative self-concept characteristics. There is also a significant positive association of Conscientiousness in the job-related context with Extraversion in the job-related context ( $r = .54, p < .001$ ), as well as a significant negative relationship with Neuroticism in the job-related context ( $r = -.55, p < .001$ ). This is an interesting finding suggesting that high levels of individual self-organisation, competence, self-discipline are associated with higher levels of sociability and engagement with co-workers and lower levels of emotional instability. The correlation analysis of the remaining variables should be performed with caution because of the small sample size (Pallant, 2013).

An exploratory factor analysis was considered to examine construct validity (Onwuegbuzie et al, 2007; Pallant, 2013). The correlation matrix is used to do the factor analysis and identify meta-themes (Onwuegbuzie et al, 2007). The results of validity analysis are not discussed in the paper due to limitations of the sample size, the Kaiser-Meyer-Olkin (KMO) Index of sampling adequacy value was below the minimum value of .6 (Pallant, 2013). A bigger sample size is required to perform the analysis (forthcoming).

### **3.3 Stage 3**

The final stage of data analysis involves application of a series of Fisher's Exact tests to correlate the creativity-related meta-themes with a range of demographic variables: gender, age, level of education, and employee organisational tenure. It also involves integration of qualitative and quantitative findings. However, a bigger dataset is required to conduct the analysis (forthcoming).

## **4. Discussion**

This paper investigates the association between strategic HRD and individual levels of creativity using the mixed methods research approach. This is a novel method in creativity research, helping to address limitations of previous studies, which were predominantly based on either quantitative or qualitative approach (Ghosh, 2015; LeBoutillier and Barry, 2018; Garavan et al, 2019). This method also ensures a simultaneous examination of a range of factors associated with human creativity.

This paper is based on outcomes of a pilot research study, consisting of qualitative and quantitative stages of research. The results of discourse analysis identified a range of key creativity-related constructs emerged as a result of HRD intervention. Specifically, originality, elaboration of new ideas, and fluency have been observed.

This finding confirms a relationship between strategic HRD and individual levels of creativity, which will be further investigated. Specifically, HRD intervention can be used to initiate creativity-related cognitive processes and behaviours.

To further explore the research problem and understand the depth of the association between HRD and creativity, a multi-faceted quantitative instrument was developed and tested on a small sample of participants. It demonstrated moderate to very good internal consistency. The inter-item correlation of the constructs also passed the test of reliability. Due to the small sample size, validity of the quantitative instrument was not evaluated, meaning scope for further work.

Initial results of the correlation analysis indicated a very strong relationship of Openness to experience in the job-related context and Extraversion in the job-related context with individual creative self-concept characteristics. This finding is in line with previous research on personality traits and creativity, suggesting that Openness to experience and Extraversion are among the strongest predictors of creativity (Furnham and Bachtar, 2008; Karwowski, 2016). However, it extends the previous work by interpreting the link between the constructs in the job-specific context. It should be noted that results of the correlation analysis should be interpreted with caution, considering limitations of the sample size.

## **5. Further work**

The next steps will involve confirmation of validity and reliability of the quantitative instrument using a larger sample of respondents. In addition, it will be correlated with several demographic characteristics to understand the nature of the relationship within the constructs.

After the pilot study, the on-site research will occur, aiming to further understand the association between strategic HRD and individual levels of creativity. By delivering a series of HRD intervention workshops in several organisations, this research will identify qualitative and quantitative changes in creative behaviours pre- and post the interventions periods.

The results of the study will permit the generation of a model of creativity and a novel self-assessment tool, which can be employed to enhance the strategic HRD-creativity nexus.

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# The Use of Mobile Learning Technologies for the Professional Development of Academics at a University of Technology

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**Abstract:** This article deals with the use of mobile learning technologies for the professional development of academics. Professional development of academics using mobile technologies is always overlooked and never explored in higher learning institutions. Twenty-first century workers work flexible hours with access to staff development anytime, anywhere. Mobile learning is a modern type of learning across multiple contexts through social and content interaction using personal electronic devices. Academic staff development is conducted mainly via workshops; however, this is not suitable for this group of workers as they work flexible hours. Using mobile technologies for staff development might be advantageous as academics will have the flexibility to learn wherever they are. The aim of this study was to explore mobile learning technologies for the professional development of academics. This was a qualitative study using the design-based research model. A theoretical perspective of the ADDIE model was applied as the generic process traditionally used by instructional designers and training developers. The five phases—analysis, design, development, implementation and evaluation—represent a dynamic, flexible guideline for building effective professional development and performance support tools. Qualitative data was collected through individual interviews and via WhatsApp Group Chat (WGC) trail messages with academics and instructional designers. Data collected from all interviews was audio recorded and the WGC was exported and saved for analysis. The audio data was transcribed and typed into a word processing document before analysis. Thematic analysis was used to identify, analyse and report patterns (themes) within the data. The participants used the mobile learning design evaluation checklist to give their input about the learning intervention. The findings of the study reveal that WGC as a social media platform is effective for staff development as it is flexible and inclusive.

**Keywords:** Mobile learning, Professional development, Academics, Instructional designers, ADDIE, WhatsApp Group Chat

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## 1. Introduction

Mobile learning is now perceived as the next milestone of educational technology (Peng, Chou, and Tsai, 2009, 172). The New Media Consortium Horizon Report Europe 2014 emphasised that mobility is a key feature of the digital age and one that is likely to shape the future of education (Johnson et al., 2014, 44–45).

Mobile learning has aroused increased interest all over the world (Kukulska-Hulme., et al, 2007. However, despite the growing interest and hype around mobile devices and mobile learning, mobile learning is no longer considered a novelty. Even though the term “mobile learning” became recognised as a formal term only in 2005 (Crompton, 2013, 11) mobile learning itself has a surprisingly long history. Alan Kay envisioned a personal and portable learning device system, namely Daybook, in the early 1970s (Naismith and Corlett, 2006, 3). Low and O’Connell (2006) argue that a book can be considered a mobile learning resource and in that sense learning has always been to some extent mobile. As mobile devices are becoming increasingly global, many researchers and practitioners have incorporated the technology into their teaching and learning environments.

Geddes (2004) defines mobile learning as ‘the acquisition of any knowledge and skill through using mobile technology, anywhere, anytime that results in an alteration in behaviour’.

Mobile learning devices have been discussed in support of learning in recent years, along with the different opportunities offered by technology (e.g. Çakır and Arslan, 2013; Rambe and Bere, 2013; Hwang, Huang and Wu, 2011; Macià and García, 2016). Macià & García (2016) investigated the effects of online communities of practice on ensuring the professional development of teachers. Online communities of practice have an important place in the sense that teachers voluntarily participate in learning, reflect their own practices to other teachers and give mutual emotional support (Macià and García, 2016). In their study, it was observed that science teachers at a school using WhatsApp made shares on four different themes that support professional development. These were shares about field knowledge, pedagogical content knowledge, in-school teaching practices and emotional support among teachers. The data of the study included the WhatsApp posts covering a period of one year between 2015 and 2016. Online observations were carried out

through WhatsApp messages and no interview was held with the teachers. Content analysis was used in the analysis of WhatsApp correspondences (Cansoy, 2017). Their study showed that the online community of practice, which was a group of teachers on WhatsApp, supported the professional development of teachers.

Alakurt and Keser (2014) state that information is shared and different opinions are discussed in virtual communities of practice among teachers. Rutherford (2010) found that social media offers teachers an encouraging, participatory, practical, collaborative and dynamic environment and helps teachers' professional development in fields such as pedagogical content knowledge and field knowledge. The use of social media tools among teachers helps teachers to use knowledge by reinterpreting it (Cranefield and Yoong, 2009). The community of practice emphasises the common sources created by the members as a result of their sharing and the sharing of experiences (Wenger, 1998; Wenger, McDermott and Snyder, 2002). Different social networks are also used as communities of practice (Wesely, 2013).

This study aimed to explore the use of mobile learning technologies for the professional development of academics at a university of technology (UoT). In order to attain the aim of this study, the sub-question to be answered was: To what extent would it be feasible to use mobile learning technology to deliver training to academics within a university of technology? This paper will share studies on the use of mobile learning technologies for professional development, and provide an overview of the relevant literature, design-based research (DBR) model and the theoretical perspective of the analysis, design, development, implementation and evaluation (ADDIE) model.

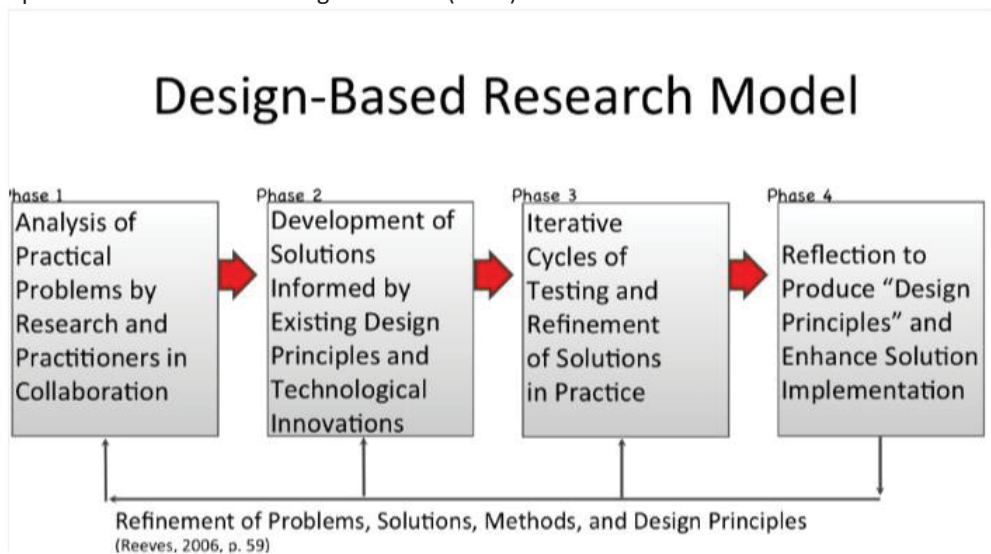
## **2. Literature Review**

Social networks have become an integral part of student social life (Deng and Tavares, 2013). The presence of positive and negative aspects of social networks does not change the fact that these tools are rapidly becoming popular, gaining an important place in our lives and starting to take their place in education (Cetinkaya, 2017). WhatsApp Messenger is a cross-platform mobile messaging application which allows users to exchange messages without having to pay short message service (SMS) charges. According to Minhas, and Ullah, (2016) people nowadays use WhatsApp Messenger frequently to remain in touch with friends and family. This platform connects users across all cellular network providers and mobile devices, allowing them to send messages, images, video and audio media as well to share their location. The WhatsApp Group Chat (WGC) feature allows users to connect within a closed group. A group administrator creates a group that users can access only by invitation of the administrator. Users can then post messages to the group. Ngaleka and Uys (2013) report that WhatsApp can be used to facilitate mobile learning. Tang and Hew (2017) report that it has been used in different academic disciplines to support students' learning. WhatsApp can be used in higher education in a number of ways to achieve different educational goals (Gasaymeh, 2017). Gachago, Strydom, Hanekom, Simons and Walters (2015) maintain that it can be used in higher education to create immediate connections, encourage reflection and facilitate coordination in informal and formal learning.

Chipunza (2013) found that WhatsApp was a useful electronic tool to facilitate information sharing among university students on a range of subjects related to the courses that they were studying. Tarighat and Khodabakhsh (2016) found that WhatsApp can be useful in language assessment. The potential of social networks when designed in accordance with the needs of science and information is alleged to cause revolutionary changes (Zaidieh, 2012), and their influence on the educational environment is increasing rapidly every day, especially with the help of internet-supported mobile technologies (Cetinkaya, 2017). Bere (2013) found that WhatsApp could be useful to 'create alternative dialogic spaces for student collaborative engagements in informal contexts, which can gainfully transform teaching'. The USAID-funded Knowledge for Health (K4Health) Project in 2016 tested the WhatsApp Messenger platform as a mode to deliver a seven-week training programme on healthy timing and spacing of pregnancy (HTSP) for professional development training content to Kenyan health workers and promote knowledge exchange and discussion. The overall purpose of this training activity was to test the acceptability and feasibility of the WGC feature as a learning platform. The findings from this training activity reveal that WhatsApp was well received as a platform for continuing professional development. However, implementation of this activity also led to a number of lessons learned around training setup, facilitation and active participation. This current study explored the use of WGC as an effective and affordable platform for professional development.

### 3. Data and Methods

This was a qualitative study undertaken using the DBR model along with the ADDIE model to develop the intervention. Wang and Hannafin (2005) define a DBR approach as a systematic but flexible methodology aimed to improve educational practices through iterative analysis, design, development and implementation, based on collaboration among a researcher and practitioners in real-world settings and leading to contextually sensitive design principles and theories. DBR is pragmatic and focuses on practical problems. It was relevant to this study to answer the research question regarding the extent to which mobile learning technologies are used for the professional development of academics at a UoT. The DBR approach incorporates cycles of analysis, design, evaluation and revision (Plomp and Nieveen, 2007). These research cycles are dynamic and integrate multiple exploratory, constructive and empirical research methods and strategies as well as manifold design techniques (Bannan, 2007). Since this study focused on educational practice, DBR assisted this study in finding the best solution to address the problem of conducting training only via face-to-face/instructor-led training) and in identifying strategies that best support mobile learning technologies. For the purpose of this study, the designed framework was completed in cycles. The DBR design was therefore very well suited to this study because the goal was to design and develop interventions to solve complex problems. The figure below shows the phases of the DBR according to Reeves (2006).



**Figure 1:** Design-based research model

Abdallah (2011) explains the core of DBR as a new paradigm or methodology in educational research that is based on both theory and previous research with the aim of improving educational practice. DBR has its own limitations despite the numerous articles indicating its benefits. Barab and Squire (2004, 10) argue that ‘if a researcher is intimately involved in the conceptualisation, design, development, implementation, and researching of a pedagogical approach, then ensuring that researchers can make credible and trustworthy assertions is a challenge’. Kelly (2013) indicates that design research may not be cost-effective for simple or closed problems. DBR was also suitable for this study because it is aligned with the instructional design methodology of the ADDIE model. Barab and Kirshner (2001) state that the goal of these researchers/educators/designers is to move beyond offering explanations of, to designing interventions for. Dick et al. (2004) emphasise that instructional design requires the use of a system to analyse problems and identify learning objectives to establish a strategic plan to solve teaching problems, test solutions, evaluate the results and revise the programme. ADDIE is process-based and follows a series of steps or guidelines. Secondly, these processes are shaped by the overriding idea that instruction in all formats must be consistent, reliable and effective in facilitating learning. Thirdly, the systematic approach allows for evaluation and assessment of the design process and individuals’ learning. The figure below is the graphical representation of the ADDIE model.

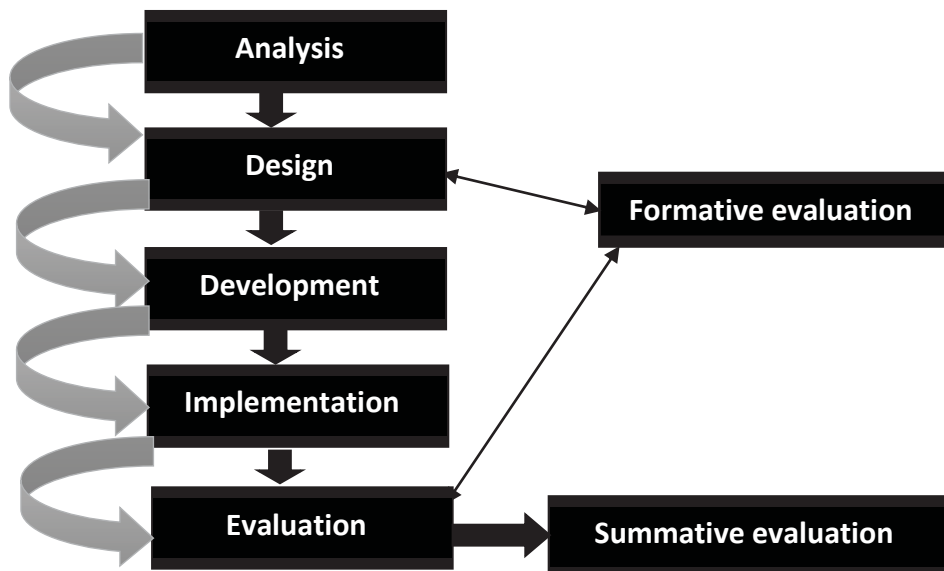


Figure 2: ADDIE model

#### 4. Challenges associated with DBR

DRB has its own limitations despite the numerous articles indicating its benefits. Barab and Squire’s (2004) article argued that “if a researcher is intimately involved in the conceptualisation, design, development, implementation, and re-searching of a pedagogical approach, then ensuring that researchers can make credible and trustworthy assertions is a challenge (p. 10). According to Norris (1997) a good research demands skepticism, commitment and detachment but DBR also requires comradeship, enthusiasm, and a willingness to actively support the intervention. Dede (2004) states that an important challenge in design-based research is determining what constitute reasonable criteria for "success" in declaring a design finished. Another challenging component of doing educational research on design-based interventions is to characterize the complexity, fragility, messiness, and eventual solidity of the design and doing so in a way that will be valuable to others (Barab and Squire,2004). I agree with the sediments shared by other researchers regarding DRB limitations because I also found out that I was fully involved with the conception of the idea, the design from the instructional design perspective, the development of the intervention and the implementation. My close involvement in all the DRB phases and ADDIE stages can have an impact on the credibility and trustworthiness of this study. DRB has been characterised as over-methodologized because only a small percent of the data collected are used to report findings (Dede, 2004). I am not in a position to respond to this view as analysis of this study is not completed. Kelly (2013) indicated that design research may not be cost-effective for simple or closed problems. I disagree with this statement because my experience is that it was cost effective and easy to implement this intervention. Anderson and Shattuck, (2012) state that one of the challenges of DBR studies is that the iterative nature can exceed the resources or the time available to researchers or funding bodies. I do support that the DRB iterative nature can exceed the resources and time allocated because I also experienced the same in terms of time as some participants had to exit the intervention during the implementation period.

Although the timing was not favourable as the implementation of the intervention coincided with the period in which participants had to mark examinations, the overall participation in the four units was vibrant and implementation schedule was executed as planned.

Fishman et al (2013) argue that most design- based research does not explicitly address systemic issues of usability, scalability and sustainability and that “this limitation must be overcome if research is to create usable knowledge that addresses the challenges confronting technology innovations when implemented in real-world school contexts” (p. 43). I disagree with Fishman et al (2013) statement because this methodology addressed the educational problem identified by this study and no challenges were experienced during the implementation. Design-based research requires documenting the whole design process and using multiple research methods in real-world learning environments. I support this view because in this study; the DRB phases and ADDIE the instructional design process were followed in an authentic learning environment. The data are typically extensive and comprehensive, requiring both extended time and resources to collect and analyse (Collins et al., 2004). However, because time and resources are often limited, large amounts of data are routinely discarded, and research quality may be influenced negatively. I am not yet in a position to

support or negate this statement shared as data analyses is still in progress. With DRB, methodological development is needed to both enhance rigor and account for the importance of local context (DBRC, 2003).

According to Dede (2004), it is difficult to determine whether to continue or abandon an iterative design, because standards do not exist to judge its effectiveness (Dede, 2004). Cobb et al. (2003, p. 10) suggests that “design experiments are conducted to develop theories, not merely to empirically tune ‘what works.’” My experience with time of implementation was that it wasn’t time consuming and the intervention was user friendly. I am satisfied with the amount of data collected via WhatsApp Chat platform together with data collected via face to face interviews.

## **5. Application of the ADDIE framework in this study**

ADDIE has shown in this study that it is iterative, involving review and revision throughout the design process.

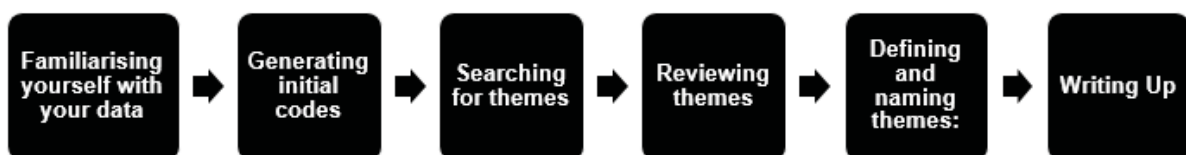
It is also a very useful management tool, allowing for the design and development of large numbers of courses to a standard high quality. The ADDIE model provides a practical framework for organising course development. Branch (2009) notes that ADDIE both describes what happens and prescribes what needs to happen. In this study, the goal of the ADDIE model empowered the academics on how to integrate mobile technology in teaching and learning via the WGC. The study used the ADDIE instructional design model to create four units which were delivered via the WGC. The design process of the learning intervention focused on engaging academics and instructional designers with the course content in innovative ways. ADDIE fits in with DBR because both designs are theory-driven and align with theories and the instructional learning model.

They are both conducted in real-world settings and are both interactive and iterative while the developer/researcher works collaboratively with the participants. Both approaches incorporate cycles of analysis, design, evaluation and revision. They both have a team of experts to create technology-based learning environments. The role players involved in the project in ADDIE are the instructional designer (specialist) and subject matter experts, and those in DBR are the researcher and the participants working collaboratively to address the specific educational problem identified and appropriately work towards the solution to be implemented. Both ADDIE and DBR employ some learning design principles to develop learning interventions. The fundamental principles of both ADDIE and DBR are to address complex problems in real contexts in collaboration with practitioners, integrate design principles with technological solutions to complex problems, conduct inquiry to test and refine innovative learning environments and define new design principles (Reeves, 2006). The use of the WGC for data collection occurred in phase 4 of the ADDIE model. The researcher obtained consent from those participants who would form part of the group. Thereafter, the researcher coordinated participants’ collaboration and gave feedback during the discussion sessions.

Qualitative data was collected through individual interviews and via the WGC trail messages with academics and instructional designers. Data from all interviews was recorded to audio and the WGC was exported and saved for analysis. The audio data was transcribed and typed into a Word document before analysis.

## **6. Data Analysis**

Thematic analysis as per the six steps of Boyatzis (1998) was employed to analyse the data collected to be able to identify, analyse and report patterns (themes) within that data. Thematic analysis is the process of identifying patterns or themes within qualitative data. Miles et al. (1994) label this as “coding” and Dey (1993) refers to it as categorising. Henning, Van Rensburg, and Smit, (2004) describe the phrase ‘to analyse’ as to take words, sentences and paragraphs apart in order to make sense, interpret and theorise the data. This is done by organising, reducing and describing the data. Raw data obtained from interviews is reduced in such a way that it becomes distilled to its essentials. For the purpose of this paper, the thematic map shown below was used:



**Figure 3:** Thematic analysis

The goal of thematic analysis is to identify themes, i.e. patterns in the data that are important or interesting, and to use these themes to address the research or say something about an issue. The intention of a study is to have specific observations and measures, begin to detect patterns and regularities, formulate some tentative hypotheses that can be explored and finally end up developing some general conclusions or framework.

## **7. Results and Discussion**

The final analysis is not completed however my experience is that as a researcher I worked with academics and instructional designers towards the implementation of the learning intervention. I acted as the online facilitator to administer the creation of WGC and coordinated the messaging discussions. I worked collaboratively with the academics and instructional designers to explore the use of mobile learning technologies for the professional development of academics at a university of technology (UoT). I coordinated participants' collaboration and gave feedback during the discussion sessions. The use of WhatsApp Chat platform to access the learning intervention for this study was beneficial because it allowed participants to access training wherever they were, at their own pace and their own time. I experienced that learning for the WhatsApp Chat intervention for the academics and instructional designers takes place through social interaction and collaboratively share knowledge among themselves. I used WGC platform because it is easy to form groups (large, small) and individual messages with voice and images. It is a best collaborative and discussion tool which I was able to text and participants responded back. I used voice notes, attach recorded video and attach document as handouts. I established that WGC is a handy tool in which I was able to engage the group of academic to discuss several topics. I employed WhatsApp Group Chat in designing my intervention because it is accommodative to the modern ways of learning and teaching. The provisional findings after the implementation of the intervention reveal that the WGC as a social media platform is effective for professional development because it is flexible and inclusive. The findings further show that there are motivators for using mobile technology for the professional development of academics as well as barriers to the introduction of the mobile technology. The motivators that participants identified were that the intervention was easy to use, it was user friendly, it met expectations, it was simple, the benefits were expressed concisely, it was easy to access and efficient, it catered for 21st century students, it was a new trend of learning, WhatsApp is a collaborative tool, interactive, instant and attractive, navigation was easy and consistent, etc. The barriers to the introduction of mobile technology for the professional development of academics were the lack of data and network, the diverse socio-economic backgrounds and lack of technological knowledge of participants, the functionalities of mobile devices for navigation that did not work and the problems with technology, etc. Thus far, the findings of the study revealed that WGC as a social media is effective for academic development because it is flexible and inclusive. The learning outcome of using WGC to implement a mobile learning intervention among academics was successfully achieved. What is encouraging is that the academics expressed that was an innovative process that made them to think far more deeply about their professional development. Although the academics regularly access the social media tools, the WGC encouraged them to participate far more actively using this platform. Generally they felt that the initiative used was effectively managed and has improved their engagement as academics. One of the benefit of WGC was to encourage academics to be thinking about their development outside formal contact hours.

Also the WGC interventions was facilitated through units such as introducing specific tasks, guiding academics on how to navigate the units, how they participate, share with them each week's intended learning objectives; a clear explanation of the benefits of contributing to this social media tool; and offering them a sense of ownership of the learning process. The outcome of the intervention suggests that through carefully planned tasks via this social media platforms, the tool has the potential to nurture, increase participation and engagement of academics at their own time, whenever and however. It also encourage participation amongst the academics and there is a greater chance that they will interact more effectively throughout assisting each other in using mobile technologies for their own development. WGC was utilised effectively to engage academics actively with this medium. The findings thus far reveal that the use of the WGC was a positive experience to support the professional development of the academics at the UoT.

## **8. Conclusion**

The main study in which research methodologies were applied, explored the use of mobile learning technologies for professional development. This paper focused on the DBR methodology and ADDIE instructional design model to develop the intervention used for the professional development of academics.

The purpose of the developed intervention was to test the acceptability and feasibility of the WGC feature as a learning platform for staff development training content to academics to promote knowledge exchange and discussion. This research project was successful in using the DBR methodology, ADDIE instructional design model and a WGC to implement a mobile learning intervention among academics at a UoT and the WGC is effective for professional development. The features offered by WhatsApp have the potential to solve training challenges experienced in face-to-face learning.

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