Succeeding with Business Process Reengineering in the Financial Service Industry

by
Imtiaz Abdul Kader

A Doctoral Thesis Presented to the Faculty of

The Engineering and Built Environment at the

University of Witwatersrand

In Fulfilment of Requirements

For the Degree of Doctor of Philosophy (PhD)

Under the Supervision of Professor Barry Dwolatzky

Johannesburg, South Africa

May, 2016

Declaration

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person nor material which to a substantial extent has been accepted for the award of any other degree or diploma of the university or other institute of higher learning, except where due acknowledgment has been made in the text.

……

I Abdul Kader Date

Abstract

The problem of failed projects has been and still is an interesting topic with many views emanating through various research avenues. The research presented in this thesis is one such avenue. In pursuit of Business Process Reengineering (BPR) via defined and executed projects, the financial institutions of South Africa have not seemed able to succeed in executing a high number of successful BPR projects. The research presented in this thesis was undertaken to understand why this was, even though industry accepted methodologies such as Six Sigma and Lean Engineering were adopted.

The research focused on understanding what factors influenced the successful execution of BPR projects, by reviewing prior research and by conducting a case study. This analysis led to the development of the “Organisation Ring of Influence” (ORoI) model which highlighted the impact and influence organisation structures and organisation behaviours have on the successful execution of BPR projects.

The primary objective of the research, however, was to take this understanding and combine it with the thinking of Systems Theory, more specifically the socio-technical problem solving methodology developed by Peter Checkland, known as Soft Systems Methodology (SSM), in order to develop a management approach. If applied, the management approach would improve the probability of success of executed BPR projects. The management approach developed was termed the “Pre Project Organisation Environment Enablement Model” (P^2OE^2M).

Key Words: Organisation Culture, Organisation Behaviour, Business Process Reengineering, BPR Projects.

Acknowledgements

In my journey to complete my PhD, there have been numerous people who have supported me and have given me the strength and encouragement to persevere and reach its destination. I would like to take this opportunity to acknowledge as well as thank them for their support and assistance.

Firstly, I would like to thank my wife Hajira for her love and support, for which I will always be grateful. She was my pillar of strength and stood by me through all the sleepless nights. I would also like to dedicate the research presented in this thesis to my daughter Zariya and my son Nomaan, may they one day achieve their personal and academic aspirations as well.

Secondly, I would like to thank my supervisor Professor Barry Dwolatzky for his wise words, supervision and guidance. This supervision and guidance was supported by David Funchall. David was selected as the research external auditor and over the journey of the research has become a close colleague and friend.

Thirdly, my acknowledgment goes out to the people who kept me honest and provided constructive feedback as they peer reviewed the research through its journey. These are Erwin Ching-Sent, Kevin White, Charles Parmer and Srikanth Sriperumbudhuri.

Further, I would like to acknowledge Ian Weir, Veronica Kotze, Andre de Koning, Dawie Olivier and Jeff Lopes who supported me at work and Barry Myburgh for his review and feedback contribution towards the latter part of the journey.

To the above people I owe my thanks and gratitude for their support.

Contents

Declaration ..... **i**
Abstract ..... **ii**
Acknowledgements ..... **iii**
Contents iv
Figures ..... **viii**
Tables ..... **ix**
Glossary ..... **x**
1 Introduction **1**
1.1 Background 1
1.2 Purpose 2
1.3 Questions 3
1.4 Research Significance and Knowledge Contribution 3
1.5 Ethical Considerations 4
2 Literature Review **6**
2.1 Research Relationship to Researched Disciplines 6
2.2 Literature Review of Prior Work 9
2.2.1 Review of BPR Project Influential Factors Identified by Prior Research 9
2.2.2 Review of BPR Execution Approaches Proposed by Prior Research 12
2.3 Business Process Reengineering Methods 14
2.3.1 Six Sigma 15
2.3.2 Lean 16
2.3.3 Lean Six Sigma 17
2.3.4 Theory of Constraints (TOC) 20
2.3.5 Business Process Reengineering as a method 21
2.4 Project Management Methodologies 26
2.4.1 Project Management Professional (PMP) 26
2.4.2 PRINCE 2 28
2.4.3 Literature Review – Prior Research on Project Management 29
2.5 Summary 31
3 Research Design and Method **33**
3.1 Introduction 33
3.2 Research Objectives 34
3.3 Philosophical Assumptions 35
3.3.1 Axiological 35
3.3.2 Epistemological 36
3.3.3 Interpretivism Research Paradigm 36
3.4 Research Inquiry 37
3.5 Research Method 40

3.5.1 Develop Research Purpose 42
3.5.2 Develop Research Question/s 43
3.5.3 Case Study and Unit of Analysis Selection 43
3.5.4 Data Collection 46
3.5.5 Data Analysis 48
3.5.6 Cross Case Analysis 49
3.5.7 Concept Development 57
3.5.8 Methodology Development 58
3.6 Research Validity and Reliability 59
3.6.1 Construct Validity 59
3.6.2 Internal Validity 60
3.6.3 External Validity 60
3.6.4 Reliability 61
4 Case Study Field Work and Analysis 62
4.1 Pilot Study 62
4.2 Case Study Selection 63
4.3 Revision of Project Influential Factors Previously Researched 64
4.4 BPR Project Influential Factor Analysis Approach 66
4.5 Overview of First Selected Project 66
4.5.1 Context of Project 67
4.5.2 Analysis of Project 67
4.6 Overview of Second Selected Project 68
4.6.1 Descriptive Context 68
4.6.2 Analysis of Project 69
4.7 Overview of Third Selected Project 70
4.7.1 Descriptive Context 70
4.7.2 Analysis of Project 71
4.8 Overview of Fourth Selected Project 71
4.8.1 Descriptive Context 71
4.8.2 Analysis of Project 72
4.9 Overview of Fifth Selected Project 72
4.9.1 Descriptive Context 73
4.9.2 Analysis of Project 73
4.10 Cross Case Study Analysis 74
4.10.1 Analysis Cross Reference 74
4.10.2 Concept Development 92
4.10.3 Case Study Analysis Conclusion 98
5 Leveraging Soft Systems Methodology 99
5.1 Introduction 99
5.2 System Leverage Points 101
5.3 Soft Systems Methodology Concepts and Activities 103

5.3.1 Conceptual Modelling 103
5.3.2 Hard System Views versus Soft System Views 104
5.3.3 Soft Systems Methodology 104
5.4 Summary 108
6 Managerial Implications: The Pre Project Organisational Environment Enablement Model (P^2OE^2M) 110
6.1 Introduction 110
6.2 Systems Concepts Adoption and Adaptation 110
6.2.1 Project Goals and Objectives 111
6.2.2 Identify and Categorise Project Influences 111
6.2.3 Mitigate Negative Influences 112
6.2.4 Focused Mitigation 112
6.3 The P^2OE^2M Model Defined 112
6.3.1 Overview of the P^2OE^2M Model 113
6.3.2 The P^2OE^2M Model Phases 114
6.4 Summary 139
7 Conclusion, Limitations and Future Research 142
7.1 Introduction 142
7.2 Research Findings 143
7.3 Theoretical Contribution 145
7.4 Practice Contribution 146
7.5 Methodological Contribution 146
7.6 Reflections on Research Validity Reviews 147
7.7 Limitations of Research 147
7.8 Recommendations for Future Research 148
7.9 Concluding Remarks 149
References 150
Appendix A: Application of Case Study Selection Protocol 157
Appendix B: Findings and Timeline View of Projects 157
Appendix C: Email Listing of Field Work Performed 181
Appendix D: Email Listing of Reviews Performed 201
Appendix E: Organisational Consent 202
Appendix F: Charles C Ragin's published fsQCA Manual 208
Appendix G: Email Debate on the Term "Methodology" 231
Appendix H: BPR Project Success/Failure Factors (La Rock, 2003) 234
Appendix I: Sample of Email Content 235
Appendix J: Sample of BPR Project Plans 261
Appendix K: Presentation Feedback Template 267
Appendix L: Presentation Attendee List 268
Appendix M: Presentation Completed Feedback Forms 272
Appendix N: Presentation Slides 282

Appendix O: Published Articles and Associated Feedback.....284
Appendix P: YIN, 2009, Case Study Method 291
Appendix Q: Sufficiency Analysis Detail View 292
Appendix R: Sufficiency Analysis of Negated fsQCA Matrix 294

Figures

Chapter 2
Figure 2.1: Literature Map 8
Figure 2.2: List of Literature Reviewed 9

Chapter 3
Figure 3.1: Research Design Framework 33
Figure 3.2: Case Study Method 41
Figure 3.3: Purpose Development Model 42
Figure 3.4: Basic Types of Case Study Designs (Source Yin, 2009) 44
Figure 3.5: Data Analysis Layers 49
Figure 3.6: QCA Application Model for Cross Case Analysis 53
Figure 3.7: FsQCA versus csQCA Data Representation (Source Ragin, 2008) 54
Figure 3.8: Methodology Development Model 59

Chapter 4
Figure 4.1: Practice Perspectives 62
Figure 4.2: Summary of Factor Presence across the Selected Projects 75
Figure 4.3: fsQCA Matrix Truth Table Excluding Outcome Values 81
Figure 4.4: Output of Analysis - Most Complex Solution 81
Figure 4.5: Output of Analysis - Intermediate Solution Term 83
Figure 4.6: Output of Set Coincidence Analysis 91
Figure 4.7: Organisation Ring of Influence (ORoI) 95

Chapter 5
Figure 5.1: Systems Diagram of a BPR Project System 99
Figure 5.2: SSM Inquiry (Source: Systems Thinking Systems Practice, Checkland 1999) 105
Figure 5.3: SSM (Source: Systems Thinking Systems Practice, Checkland 1999) 106

Chapter 6
Figure 6.1: P^2OE^2M Model 114
Figure 6.2: P^2OE^2M Model Phase 1 Activities 115
Figure 6.3: P^2OE^2M Model Phase 2 Activities 118
Figure 6.4: Example Organisation Context Diagram 122
Figure 6.5: P^2OE^2M Model Phase 3 Activity 123
Figure 6.6: BPR Project Outcome Influential Scale 124
Figure 6.7: Example 1 Application of the BPOIS Model 125
Figure 6.8: Example 2 Application of the BPOIS Model 125
Figure 6.9: Example Results for Step 3.1 a 126
Figure 6.10: Example Results for Phase 3 of the P^2OE^2M Model 128
Figure 6.11: P^2OE^2M Model Phase 4 Activity 128
Figure 6.12: P^2OE^2M Model Phase 5 Activities 131
Figure 6.13: BPR Project Success Probability Chart 134
Figure 6.14: Example BPR Project Success Probability Score Pre Mitigation Identification 135
Figure 6.15: Example Proposed BPR Project Success Probability Score if Mitigation Steps Were Implemented 136
Figure 6.16: P^2OE^2M Model Phase 6 Activity 138
Figure 6.17: P^2OE^2M Model Phases and Activities 141

Tables

Chapter 2
Table 2.1: Consolidated list of BPR Project Influential Factors Based on Prior Research 10

Chapter 3
Table 3.1: Qualitative Characteristics Linking to Research 38
Table 3.2: BPR Project Selection Protocol 45
Table 3.3: Data Collection Types and Associated Protocols 46

Chapter 4
Table 4.1: BPR Project Description and Selection Results 63
Table 4.2: Revised Project Influencing Factors 65
Table 4.3: Categorisation of BPR Project Success Factors 76
Table 4.4: Initial Categorised BPR Success Factor Percentage Results 78
Table 4.5: Selected fsQCA Interval Model 78
Table 4.6: Recalculated Categorised BPR Success Factor Percentage Results 79
Table 4.7: Finalised fsQCA Matrix 80
Table 4.8: Original Truth Table Analysed Excluding Logical Remainders 81
Table 4.9: Truth Table including Counterfactual Cases 82
Table 4.10: Final Set of Relevant Conjunctural Causal Conditions 84
Table 4.11: fsQCA Matrix where the Outcome is Negated 85
Table 4.12: Fully Negated fsQCA Matrix 85
Table 4.13: Output of Sufficiency Analysis for Fully Negated fsQCA Matrix 86
Table 4.14: Conjunctural / Causal Conditions Based on 0.85 Consistency Value 88
Table 4.15: Combined Conjunctural / Causal Conditions Symmetrical Analysis 88
Table 4.16: Relative Importance of Causal Conditions 90
Table 4.17: Analysis Outcome of Relative Importance Appended with Set Coincidence Scores 91
Table 4.18: New versus Prior Researched Factors 92

Chapter 6
Table 6.1: Template to Apply the PQR and CATWOE models 117
Table 6.2: Question Based Framework to determine the "What" and "Who" 119
Table 6.3: Example Results for P^2OE^2M Model Phase 4 129
Table 6.4: Example for Activity 5.1 Refine Mitigation Steps 132
Table 6.5: Example Mitigation Step Implementation Priority 135
Table 6.6: Example Action Plan to Implement Pre Project Organisational Mitigation Steps 137
Table 6.7: Example Mitigation Steps to Be Transferred to Project 138
Table 6.8: Example Accepted Risks Transferred to Project 139

Glossary

5DPM	5 Dimensional Project Management
ARIS	Architecture of Integrated Information Systems
BCD	Business Case Document
BML	Business Modelling Language
BPI	Business Process Improvement
BPM	Business Process Management
BPOIS	BPR Project Outcome Influential Scale
BPR	Business Process Reengineering
CITM	Comprehensive IT tools based Methodology
CSC	Computer Science Corporation
DFSS	Design For Six Sigma
DMADV	Define Measure Analyse Design Verify
DMAIC	Define, Measure, Analyse, Improve and Control
DPMO	Defects Per Million Opportunities
HR	Human Resources
HSM	Hard Systems Methodology
IDDOV	Identify Define Design Optimise Validate
IRB	Internal Review Board
IT	Information Technology
P^2OE^2M	Pre Project Organisational Environment Enablement Model
PgMP	Program Management Professional
PMI	Project Management Institute
PMP	Project Management Professional
PRINCE 2	Projects In Controlled Environments
QCA	Qualitative Comparative Analysis
RIE	Rapid Improvement Event
SA	South Africa
SME	Subject Matter Expert
SOW	Scope of Work
SSM	Soft Systems Methodology
ST	Systems Theory (Thinking)
TOC	Theory of Constraints

1 Introduction

Methodology! A word that has become renowned globally to guide various disciplines in realising successful projects, yet so many projects have been recorded as failures. A research article by McKinsey & Company states that, "*on average, large IT projects run 45 percent over budget and 7 percent over time, while delivering 56 percent less value than predicted"* (Bloch, et al., 2012). Furthermore, a Harvard Business Review research article, reviewing 1471 projects, states that projects experience between 27% and 200% cost overruns with one in six projects experiencing a schedule overrun of up to 70% (Flyvbjerg & Budzier, 2012). The biggest question on people's minds is; Why? Why have these projects failed? Surely if you follow a proven method of executing a project that is associated with many successes, these high percentages should not exist. The hard truth, however, is that these failed projects exist and the percentages of failures exceed the percentages of successes.

These failures exist across various disciplines, including the discipline of **B**usiness **P**rocess **R**eengineering (BPR) (also known as **B**usiness **P**rocess **I**mprovement (BPI) or **B**usiness **P**rocess **M**anagement (BPM)). BPR implementation failure rates are quoted as high as 70% (Habib & Shah, 2013) (Alghamdi, et al., 2014). BPR is used in the research presented in this thesis as the overarching term that encompasses a business process improvement or reengineering effort, project or initiative and associated methods, tools and techniques. Various literatures have been centred on the failure of these types of projects and the factors that influence their success such as culture, executive sponsorship and buy-in, suitable deployment teams and organisation adaptability (La Rock, 2003) (BPR Online Learning Centre, 1999) (Denning, 2010) (Davenport, 2007). If so much has gone into understanding why business process type projects either succeed or fail, why are such a large number of them still failing (La Rock, 2003)? One way to answer such a question is to perform a case study analysis against contemporaneous projects, contextualised and executed within an environment dedicated to deliver on BPR type projects.

These issues or problems of failed projects, even within the BPR disciplines is very broad and spans various industries, including manufacturing and service type organisations. In order to undertake a reasonable study, focus should be given to a specific industry using specific methodologies within a project environment suited for business process reengineering type projects.

The focus of the research presented in this thesis was to undertake such an endeavour, beginning with an introduction into the research as part of Chapter 1. This will be followed by an extensive literature review in Chapter 2, an explanation of the research design selected in Chapter 3 including the explanation of the method used for conducting the research, a discussion on the case study field work and the associated analysis outcomes in Chapter 4, an overview of the work of Donella Meadows and Peter Checkland that was used to inform the suggested management approach in Chapter 5 and the recommended management approach is described in Chapter 6. The thesis will conclude with points on knowledge contribution, limitations of research and considerations for future research as part of Chapter 7.

The next sections will provide an overview of the research.

1.1 Background

Further to the aforementioned context where BPR as a project discipline was placed as having a high number of failed implementations, it is worth mentioning that work has gone into creating frameworks and methodologies (Muthu, et al., 1999) (Murphy, 2009) that have inherent in them the purpose of enabling these success factors to ensure smooth and successful BPR implementations. BPR projects are deemed to have failed if the project

experiences overrun in costs, overrun in schedules, delivering poor quality and do not meet the delivery of the stated business requirements and benefits (derived from how projects are measured as failures as stated by McKinsey and Harvard Business Review (Bloch, et al., 2012) (Flyvbjerg & Budzier, 2012)).

Returning to the specific issue at hand, the researcher has worked in the financial industry's project environment for more than 10 years, covering both the **I**nformation **T**echnology (IT) and BPR disciplines. It was interesting to note how many projects throughout the 10-year tenure experienced cost and schedule overruns, delivered poor quality due to time pressures, did not meet business expectations and did not result in attaining the full stated benefits. Being in many roles, including that of a project manager, the researcher found himself and the project teams being blamed for failed projects. Sometimes the methodologies used to execute projects were also deemed as contributors to failed projects and were continuously changed and or improved upon only to result in more failed projects. The researcher holds a Master's Degree in Engineering and was academically exposed to reasons why projects fail and found these practical experiences at odds with his academic experiences. This led the researcher to believe that there was a gap in the understanding of why projects fail, over and above the current available literature. The researcher then embarked on a journey to discover why projects fail and to determine if there was no silver bullet in existence that could solve the problem of failed projects. In this journey, it became apparent that there was no silver bullet and that projects can fail for so many reasons or any combinations thereof. The researcher found an opportunity to research project failures within the BPR domain with the aim to create self-understanding of why projects fail and to determine if there is any way of improving his own success in executing successful projects.

The BPR domain was selected due to current tenure on projects and current observations about the four major South African banks, including which, that they have been observed aggressively pursuing cost savings by introducing BPR initiatives. The banks were met with project failure issues as the methodologies that they had adopted as silver bullets, namely, Six Sigma and Lean Engineering were not yielding the results as anticipated (David, 2008) and as seen in organisations such as Motorola and General Electric (Murphy, 2009) (Process Quality Associates, 2006). Research has also proven that there are factors that need to be in place before the execution of these methodologies would yield the promised results (La Rock, 2003) (BPR Online Learning Centre, 1999) (Murphy, 2009) (David, 2008).

From the above it became apparent that the BPR project communities were intimately aware of the process improvement methodologies and the success factors related to successful BPR projects, which then led the researcher to the repeated question of why do these projects fail and ultimately how can one improve the rate of success?

1.2 Purpose

Having outlined the problem of failed BPR projects in the South African financial services industry, progress can be made to advance the purpose of conducting research within the BPR discipline.

The ultimate and overarching purpose of the conducted research was to derive a fit-for-purpose management approach that would guide project leaders in executing their projects within their organisational environments successfully (c/f Section 3.5.1). To reach that overarching purpose, the researcher observed BPR project executions within a financial institution in order to understand what factors influence the success of a project. These observations were interpreted in order to form concepts that led to the development of the management approach.

Further to the project observations that would provide an understanding and the context of contemporary phenomena within the BPR discipline, a deep dive into the soft systems methodology was undertaken to understand how this method and or concepts could assist in deriving the management approach (c/f Chapter 5).

1.3 Questions

Research is based on the foundation of seeking solutions to problems, and therefore asking the right questions (Leedy & Omrod, 2010) (Yin, 2009) will yield the correct answers any researcher is looking for. So, in order to achieve the purpose of the research, what would the right question be?

Thus, the primary research question is formulated as follows:

How should a BPR project be executed within a financial service company to achieve an appropriate balance of the critical success factors?

Supporting questions need to be structured in a way that would guide the research through the process of answering the primary research question stated above. The following questions are supportive in nature towards answering the primary research question:

- Has prior research identified all relevant project influential factors? If not, what are the other relevant project influential factors?
- Which project influential factors are more relevant or important to the successful outcome of a BPR project?
- How can the prevalence of the applicable BPR project influential factors be determined?
- What is required in order to enable and prioritise highly relevant and important BPR project influential factors that would lead to a successful outcome?
- How do the above integrate with current BPR project methodologies?

In the next section the significance of the research and its knowledge contribution will be discussed.

1.4 Research Significance and Knowledge Contribution

Research is not about information gathering, information summarisation and relocation nor is it about catch phrases that product marketers' use (Leedy & Omrod, 2010). Research is a systematic process of collecting, analysing and interpreting information in order to increase understanding and knowledge of a phenomenon (Leedy & Omrod, 2010). In the case of the research presented here the phenomenon is that of executing successful BPR projects in a financial institution. In understanding the above stated phenomenon, two distinct significant value added themes were proposed as being further outcomes of the conducted research, the first being that of knowledge advancement, and the second being that of organisational capability enhancement.

Knowledge advancement is further subdivided into advancing knowledge for two academic disciplines. The first and primary academic discipline is that of Industrial Engineering of which BPR is a part. The conducted research advances the outcome of a fit-for-purpose management approach applied to BPR execution, specifically catering for the financial industry, and aiming to assist in improving the success rate of executed BPR projects.

The secondary academic discipline for which knowledge advancement is prevalent is that of systems theory methods and the application thereof within the BPR project execution discipline. General systems theory has for a long period inferred integration with a multitude of disciplines (Von Bertalanffy, 2009). By applying systems theory methods, in particular the soft systems method, to the BPR discipline, the research will broaden the application domain of systems theory and advocate positively for the proclaimed inferred integration.

The researcher defines organisational capability as the ability of an organisation to perform a function successfully. Via the advancement of the management approach towards BPR execution, financial institutions should be able to improve their rate of success for executing

BPR projects within their organisational environments. This directly enhances their probabilities to capitalise on benefits stated with these types of projects such as cost reduction, improved return on investment and the much sought after benefit of improved customer satisfaction.

The advancement of knowledge in the BPR domain and systems theory discipline, as well as organisational capability enhancement positively supports the need for the research conducted. To further strengthen the case as to why the research was conducted an extensive literature review, covered in Chapter 2, was performed in order to:

- Reveal relationships of prior research to the topic researched (c/f Section 2.1)
- Identify gaps on previous research into BPR project execution methodologies and management approaches (c/f Sections 2.2 and 2.3)

Before advancing to Chapter 2, it is important to consider the ethical implications of the research and therefore an overview of the ethical considerations is described next.

1.5 Ethical Considerations

Any research that is conducted in a real life context, such as a case study, obliges the researcher to cater for important ethical considerations (Yin, 2009). These ethical considerations fall into four major categories:

- Protection from harm (Leedy & Omrod, 2010) (Yin, 2009)
- Informed consent (Leedy & Omrod, 2010) (Yin, 2009)
- Right to privacy and confidentiality (Leedy & Omrod, 2010) (Yin, 2009)
- Honesty (Leedy & Omrod, 2010)

The first category, protection from harm, does not lend itself to the type of research that will be undertaken, as the research does not add to the day to day activities of the project's participants, nor does the research plan to expose the research participants to any harm or stress, as the research is conducted during working hours at the organisation's premises (Leedy & Omrod, 2010). The three subsequent categories, informed consent, honesty and right to privacy and confidentiality however lend themselves to be considered. Appropriate measures have to be taken to safeguard the researcher and the research participants.

Informed consent is when the research participants are made aware of the nature of the case study (Yin, 2009) and the use of any documentation that arises from conducting the case study (Leedy & Omrod, 2010). In the case of the current proposed research, as mentioned earlier, the organisation under study is the primary research participant. The organisation, its structures, behaviours and people were observed, while executing BPR type projects. The people themselves were not considered to be research participants, rather, they were considered to be part of the organisation's attributes contributing towards interactions and outcomes. The interactions and outcomes were key observables used as data points within the case study conducted. It was also imperative for the case study to be conducted, in as far as possible, in a natural setting with no unwanted influences in order to achieve unbiased or influenced results. An authorised appointee of the bank was consulted and informed by the use of a formal document, content of which appears under Appendix E.

Privacy and confidentiality were also advanced by the use of the formal document. Privacy and confidentiality protect the organisation and its employees against unauthorised use of views and responses unless special permission is granted. Pseudonyms were used in instances where references linked specific outcomes to specific individuals or entities.

Honesty is an ethical principle directed at the researcher. The researcher should at all times aim to report on all findings in a complete and honest fashion (Leedy & Omrod, 2010), without influencing, fabricating and misrepresenting information or outcomes.

Acknowledgement and credit (Leedy & Omrod, 2010) also reside under the auspices of honesty. The researcher is always bound by his own professional ethics and integrity, and should under no circumstance circumvent any acknowledgements and rightly attribute credit where credit is due.

The researcher shall be guided by the aforementioned ethical considerations to maintain his own integrity and also to ensure that all known ethical qualms are rightfully addressed to avoid undue negative impacts on the research and the success thereof.

The next chapter will focus on the reviewed literature and how it related to the research.

2 Literature Review

Before a detailed literature review could be conducted, the relationship of BPR to othere researched disciplines had to be established. This was achieved using a limited set of literature during the early stages of the research, which started in the year 2011. This then informed the direction to be taken to identify appropriate and relevant literature for conducting a detailed review, as more current literature which would have to be published after the year 2011, would be required during the 4-year tenure of the research. Thereafter the detailed review was broken down into three sections, namely; prior work; BPR methodologies; and project management methodologies. The prior work section of the literature review focused on analysing existing research on the subject of BPR project failures and how to improve the rate of success. The BPR methodologies section focused on creating an understanding of existing BPR execution approaches; and the project management methodologies section focused on creating an understanding of the project management methodologies used within the case study organisation.

Further links to current research were also investigated in the domains of knowledge management (also known as intellectual capital management) and the learning organisation. The next section outlines the research relationship to the relevant research disciplines covered in the detailed literature review.

2.1 Research Relationship to Researched Disciplines

The use of a literature map (Creswell, 2009) was employed to indicate the relationship to current literature, which included books, prior research, recent journals and electronic articles. The literature map is illustrated in Figure 2.1.

The literature map positions a topic, BPR Project Execution, as the definitive point of departure. This then leads into subtopics, which are further broken down into points of interest leading to the need for study, namely, the BPR Execution Methodology.

The need for study is determined firstly by the BPR Methodology sub topic. As you will read in the Case Study Analysis section, Lean Six Sigma was practised within the organisation where the research was conducted. The service derivative of the Lean Six Sigma methodology is described in George, 2003, who provides an in-depth understanding of Lean Six Sigma and its use in the service industry.

An alternative method for process improvement within service industries was also advanced by Goldratt (in Cox III, et al., 2010), known as Theory of Constraints. Lean Six Sigma and Theory of Constraints are technical methodologies whereby the actual processes are improved by following prescribed steps. Selecting the appropriate methodology for use is something that would require further understanding and research. Nave, 2002, suggested an approach to selecting the right methodology for use, however, he only focused on the purpose of the three commonly known methodologies, namely, Six Sigma, Lean, and Theory of Constraints. Lean Six Sigma is positioned as a hybrid that fulfils the purposes of Lean and Six Sigma when it comes to process improvement (George, 2003) (Furterer, 2009), therefore a selection approach should focus on broader aspects of use than just the purpose and should include methodology hybridisation and organisation integration components.

BPR Success Factors forms part of prior research (BPR Online Learning Centre, 1999) (La Rock, 2003) (David, 2008) and provide descriptive narratives of what an organisation requires to succeed in executing BPR projects. However, this does leave the gap of how organisations would know that these success factors exist, and if not, how do they entrench these factors to ensure BPR project success.

The need to study the BPR Execution Methodology as a phenomenon also arises because of concerns raised by industry gurus such as Harmon, 2008, who states,

"Techniques like Lean, Six Sigma, and Business Process Re-Engineering that were developed to help improve manufacturing processes need to be reconceptualised before they will be as effective in analysing and redesigning service processes." (Harmon, 2008)

In his article, "The FAD that Forgot People", reports (as appearing in the **C**omputer **S**cience **C**orporation (CSC) index of 1994), Davenport, 2007, reports that 67% of the completed re-engineering projects were judged as producing mediocre, marginal, or failed results. He also states that process reengineering has become synonymous with layoffs, hence the negative perception from a change management and people perspective. These concerns are still contemporary and relay the need for adequate change management practices when embarking on BPR projects.

The last subtopic, Systems Theory, is not directly related to the BPR project execution phenomenon; however, Ackoff, 1995 suggests an alternate way of looking at process reengineering. He suggests that improvement or continuous improvement should focus on the whole and not the parts. Further research is required to advance this thought process and how it applies to process improvement and especially the BPR project phenomenon, as it relates to the research presented in this thesis.

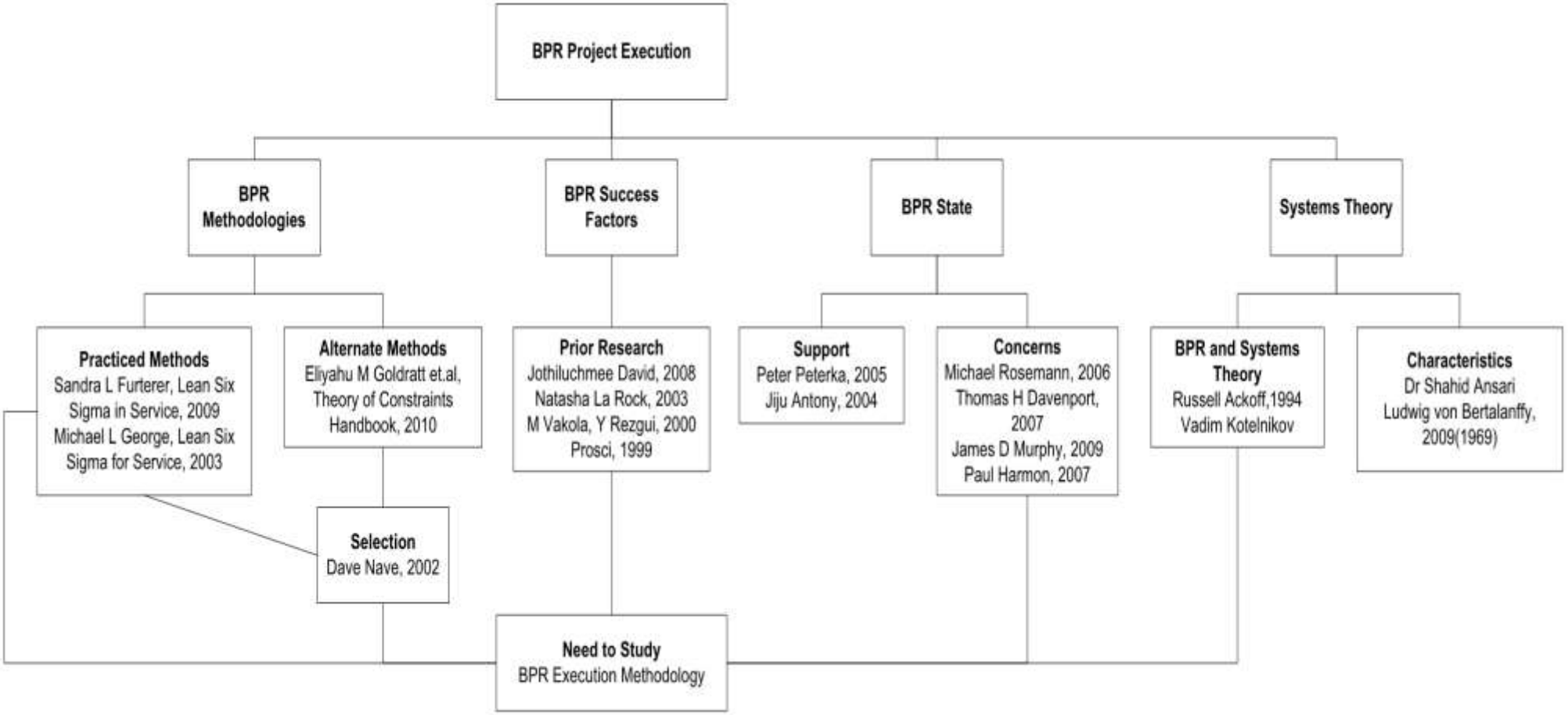


Figure 2.1: Literature Map

2.2 Literature Review of Prior Work

A very famous quote in the BPR fraternity, *"Reengineering is the fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical, contemporary measures of performance such as cost, quality, service and speed"* (Hammer & Champy, 1994), suggests that change should not be driven by what we know of how we do things, but how we should be doing things that we know, being normative rather than descriptive. On reading this quotation and combining it with relevant experience in executing BPR projects, the researcher propounds business process change as being driven by the organisation purpose and capability that are aligned to the organisation strategy, structures, operating models and further directed by outside influences such as customer requirements and legislation. In other words, a holistic approach to a BPR project execution would be required. A literature review was conducted, focusing on the current research period between 2010 and 2015, while also giving consideration to research conducted as early as 1995. Figure 2.2 provides a view of reviewed literature based on previous research. The reviewed literature was specifically selected because it aligned to two particular research aspects that were considered as part of the research presented in this thesis, namely,

- research into BPR project influential factors
- proposed new models that are aimed at improving the success of executing BPR type projects.

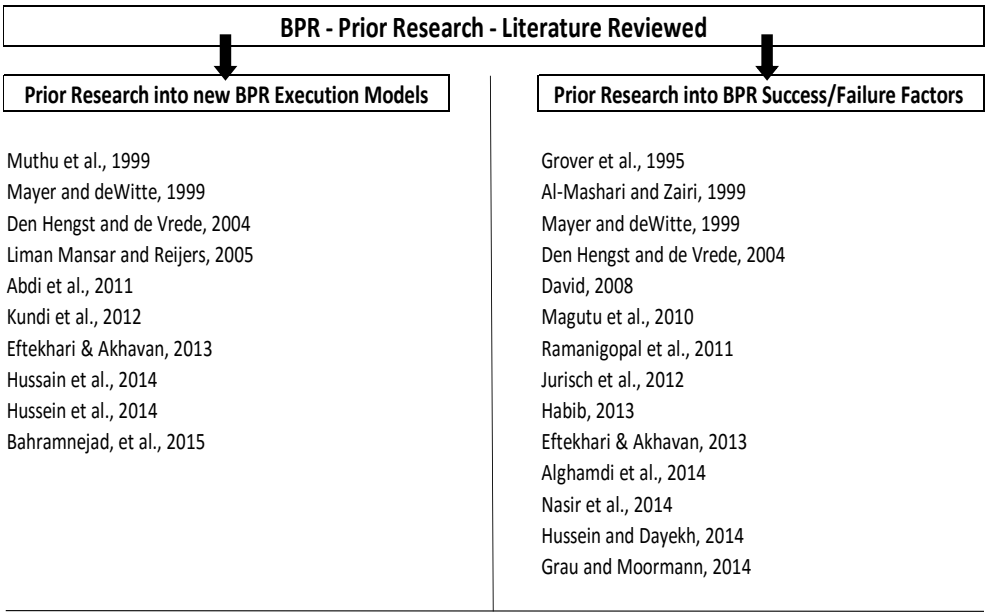


Figure 2.2: List of Literature Reviewed

2.2.1 Review of BPR Project Influential Factors Identified by Prior Research

As mentioned earlier, one of the outcomes of the literature review was to consolidate a list of BPR project influential factors as identified by prior research. Table 2.1 represents the consolidated list and also links each factor to the relevant literature reviewed. The list is in no particular order and does not distinguish between failure and success factors. It is a representation of factors that can influence a BPR implementation either negatively or positively as derived from consolidating efforts of prior research.

A baseline of factors was created by reviewing literature published from the year 1995 to 2014 (Grover, et al., 1995) (Mayer & deWitte, 1999) (Al-Mashari & Zairi, 1999) (Den Hengst & De Vreede, 2004) (David, 2008) (Ramanigopal, et al., 2011) (Jurisch, et al., 2012) (Hussein & Dayekh, 2014) (Nisar, et al., 2014). The majority of the reviewed literature was selected as it had an element of originality (prior research was not its only source of reference) in terms of identifying the factors. Grover et al., 1995, was selected on the basis that they had extensively reviewed literature published prior to 1995 and that the factors represented were exhaustive for the research period prior to 1995. The banking sector, which is the context of the case study presented in this thesis, was covered by David, 2008, Ramanigopal et al., 2011 and Nisar et al., 2014.

Other research into BPR project success or failure factors derived the factors by consolidating efforts of prior research and by referencing and supporting existing factors without contributing new factors (Magutu, et al., 2010) (Maleki & Yokabed, 2011) (Habib, 2013) (Eftekhari & Akhavan, 2013) (Alghamdi, et al., 2014)

While the majority of the reviewed research literature gave credence to the factors associated with the execution of a project, very little credence was given to organisational context factors, such as management structures, political climates and the organisations capability to absorb demands for change. Nisar et al., 2014, recommend that further work be carried out in order to clearly understand the relationship between an organisation's structure and top management's commitment to BPR. The research presented in this thesis aligns to this thinking and empirically investigated the suggestion by Nisar et al, 2014. In addition, Grau and Moormann, 2014, suggest that there is a gap in understanding the relationship between organisational culture and BPR (Grau & Moormann, 2014). They base this noted gap on their extensive review of literature on the topics of BPR and organisational culture. They have found that there are varied opinions on the relationship between BPR and organisational culture, based on basic qualitative investigations. They further suggest that empirical evidence is missing in this research aspect. The research presented in this thesis also aligns to this thinking and empirically investigated, Grau and Moormann, 2014, suggestion that empirical evidence is missing in investigations centred on understanding the relationship between organisational culture and BPR.

Furthermore, the reseacher also investigated if the list represented in Table 2.1 was indeed exhaustive and if all factors related to BPR implementations had been covered by prior research.

Table 2.1: Consolidated list of BPR Project Influential Factors Based on Prior Research

Prior Research Project Influencing Factors		**References**
1.	Resistance to Change	Grover et al.,1995; Al-Mashari and Zairi, 1999; Ramanigopal et al., 2011; Jurisch et al., 2012;
2.	BPR Philosophy not aligned to situation	Grover et al., 1995; Al-Mashari and Zairi, 1999; Hussein and Dayekh 2014
3.	Poor Stakeholder Involvement	Grover et al.,1995; Al-Mashari and Zairi, 1999; Den Hengst and de Vrede, 2004; Ramanigopal et al., 2011
4.	Poor analysis of As-Is Processes	Al-Mashari and Zairi, 1999; Den Hengst and de Vrede, 2004; Jurisch et al., 2012;
5.	Poor design of To-Be Processes	Al-Mashari and Zairi, 1999; Den Hengst and de Vrede, 2004; Jurisch et al., 2012;

Prior Research Project Influencing Factors		References
6.	Reluctance to invest in large BPR type projects	Al-Mashari and Zairi, 1999; David, 2008; Ramanigopal et al., 2011
7.	Alignment of Vision and Goals	Grover et al.,1995; Al-Mashari and Zairi, 1999; Mayer and deWitte, 1999; David, 2008; Jurisch et al., 2012; Nisar et al., 2014
8.	**B**usiness **P**rocess **M**anagement (BPM) Framework inclusive of supporting functional structure, IT tools and BPR methods	Grover et al.,1995; Al-Mashari and Zairi, 1999; David, 2008; Ramanigopal et al., 2011; Jurisch et al., 2012; Nisar et al., 2014
9.	Continuous Improvement Philosophy Alignment to Organisation Strategy	Grover et al.,1995; Al-Mashari and Zairi, 1999; David, 2008; Hussein and Dayekh 2014; Nisar et al., 2014
10.	Correct benefit calculations-Quantitative versus Qualitative	Al-Mashari and Zairi, 1999; David, 2008
11.	Communication	Grover et al.,1995; Al-Mashari and Zairi, 1999; David, 2008; Jurisch et al., 2012; Hussein and Dayekh 2014; Nisar et al., 2014
12.	Training of all impacted stakeholders	Grover et al.,1995; Al-Mashari and Zairi, 1999; Den Hengst and de Vrede, 2004; Jurisch et al., 2012; Ramanigopal et al., 2011; Nisar et al., 2014
13.	Motivation for all impacted stakeholders	Al-Mashari and Zairi, 1999; Den Hengst and de Vrede, 2004; Ramanigopal et al., 2011; Jurisch et al., 2012; Nisar et al., 2014
14.	Change management	Grover et al.,1995; Al-Mashari and Zairi, 1999; Den Hengst and de Vrede, 2004; Ramanigopal et al., 2011; Jurisch et al., 2012; Hussein and Dayekh 2014; Nisar et al., 2014
15.	Team structure and engagement	Al-Mashari and Zairi, 1999; Mayer and deWitte, 1999; Den Hengst and de Vrede, 2004; David, 2008; Ramanigopal et al., 2011; Jurisch et al., 2012; Hussein and Dayekh 2014; Nisar et al., 2014
16.	Aligned human resource policies	Grover et al.,1995; Al-Mashari and Zairi, 1999; Mayer and deWitte, 1999; Nisar et al., 2014
17.	Customer centric process design	Al-Mashari and Zairi, 1999; Mayer and deWitte, 1999; David, 2008
18.	Project management	Grover et al.,1995; Al-Mashari and Zairi, 1999; David, 2008; Jurisch et al., 2012; Nisar et al., 2014
19.	Project priority	Grover et al.,1995; Al-Mashari and Zairi, 1999; Ramanigopal et al., 2011
20.	Standardisation of reengineered products inclusive of processes	Al-Mashari and Zairi, 1999; Den Hengst and de Vrede, 2004;

Prior Research Project Influencing Factors		References
21.	Executive sponsorship, leadership support and commitment	Grover et al.,1995; Al-Mashari and Zairi, 1999; Mayer and deWitte, 1999; Den Hengst and de Vrede, 2004; David, 2008; Ramanigopal et al., 2011; Jurisch et al., 2012; Hussein and Dayekh 2014; Nisar et al., 2014
22.	Compelling Business Case for change	Grover et al.,1995; Al-Mashari and Zairi, 1999; Ramanigopal et al., 2011
23.	Use of a proven Process Improvement Methodology	Grover et al.,1995; Al-Mashari and Zairi, 1999; Mayer and deWitte, 1999; Den Hengst and de Vrede, 2004; Jurisch et al., 2012; Nisar et al., 2014
24.	Line management leadership, support and commitment	Grover et al.,1995; Al-Mashari and Zairi, 1999; Hussein and Dayekh 2014
25.	IT awareness and understanding (Business Process Integration)	Grover et al.,1995; Al-Mashari and Zairi, 1999; Mayer and deWitte, 1999; Den Hengst and de Vrede, 2004; Ramanigopal et al., 2011; Jurisch et al., 2012; Hussein and Dayekh 2014; Nisar et al., 2014
26.	Stable **S**cope **o**f **W**ork (SOW)	Al-Mashari and Zairi, 1999; David, 2008; Jurisch et al., 2012;
27.	Radical verse Incremental Business Process changes	Grover et al.,1995; Al-Mashari and Zairi, 1999; Mayer and deWitte, 1999;
28.	Project benefit expectations	David, 2008; Al-Mashari and Zairi, 1999; Ramanigopal et al., 2011; Jurisch et al., 2012;
29.	Project implementation timeframe	Grover et al.,1995; Jurisch et al., 2012
30.	Vendor support and relationship	Grover et al.,1995; Al-Mashari and Zairi, 1999; Nisar et al., 2014
31.	Business political climate influences	Grover et al.,1995; Al-Mashari and Zairi, 1999
32.	Organisation capability to absorb demand for change	Al-Mashari and Zairi, 1999;
33.	Management structure supports project execution	Al-Mashari and Zairi, 1999

2.2.2 Review of BPR Execution Approaches Proposed by Prior Research

In seeking the answer to the problem of failed BPR projects, prior research proposed new approaches towards improving the success of BPR implementations. This section provides a synthesis of the reviewed literature in alignment with the research presented in this thesis.

Research conducted in the late 1990s and early 2000s focused mostly on the mechanics of business process reengineering and design, including step-by-step guides of conducting analysis and modelling of future solutions by means of various tools and proposed notations (Mayer & deWitte, 1999) (Muthu, et al., 1999) (Den Hengst & De Vreede, 2004) (Liman Mansar & Reijers, 2005). They give very little consideration in the proposed approaches towards the organisation context. Mayer and deWitte, 1999, for example, suggest that BPR success means integrating a BPR capability within an organisation. They also go on to suggest that

BPR projects are successful if they "are conducted within the context of the enterprise's culture and values" (Mayer & deWitte, 1999). However, they do not necessarily look into how this can be achieved, as the organisational lenses applied are centred on the organisation's capability to support a reengineering effort, through appropriate methods, tools and resources. Although Liman Mansar and Reijers, 2005, mention organisational structure as an element in their framework, they assume that organisational structures remain stable during the process redesign work. Recent experience has taught the researcher that organisational structures do not necessarily remain stable while a project is being executed. The research presented in this thesis looks at exploring this factor, as prior research into BPR project influential factors, noted in Table 2.1, do not contain any factors that take into account unstable organisational structures and its impact to BPR.

In contrast to the research conducted in the late 1990s and early 2000s, recent research into BPR approaches acknowledges the need to execute BPR efforts integrated with the organisations context, to improve the success rate of BPR project implementations.

Hussain et al, 2014, suggest that there is a gap in the knowledge of executing BPR projects in that the organisation's readiness needs to be measured in order to minimise the risks associated with executing BPR projects. In addition, they suggest that readiness is a guarantee for BPR success (Hussain, et al., 2014). They go on to identify four failure factors which they classify as BPR readiness factors, namely, leadership Style (supportive), collaborative working environment (team engagement and change management), IT (integration, awareness and tools), top management commitment (right kind of leadership, senior management teamwork and engagement, management of risks). By referencing these factors, they propose a very simple model which states that the identified factors need to be assessed in order to gauge the readiness of an organisation to execute BPR efforts. Hussain et al., 2014, go on to recommend further avenues of research. Particular mention is made of identifying those factors that negatively contribute towards readiness, namely, understanding the criticality of change management, management skills, capability of organisations to absorb the demand for change and excellence in cross functional operations of organisations. The research presented in this thesis aligns with the thinking presented by Hussain et al., 2014, and takes into account that Hussain et al., 2014, only considered four factors and recommend further research into organisational readiness for BPR by identifying and incorporating negative failure factors. The approach taken by the researcher to derive the proposed management model, takes into account a comprehensive list of identified BPR project influential factors without focussing on any particular factor or combination of factors. The approach also assesses the presence of these factors within an organisational environment integrated with the proposed BPR effort and minimises the risks, thereby improving the success rate of BPR execution efforts.

Another suggested gap in BPR methods is that the methods are not comprehensive enough to lower the risk of BPR implementations (Eftekhari & Akhavan, 2013). In order to ensure a comprehensive BPR method, Eftekhari and Akhavan, 2013 proposed the integration of IT tools and techniques within every phase of a BPR implementation approach. In addition, they include a failure analysis component to be conducted at every phase as well. They provide a list of failure factors derived at by consolidating identified factors from prior research, which they propose be considered at every phase of a BPR implementation. The **C**omprehensive **IT** tools based **M**ethodology (CITM) has three stages, namely, "Before starting BPR project, BPR implementation and After BPR project implementation," (Eftekhari & Akhavan, 2013). Two aspects of their research are of interest to the research presented in this thesis. The first is that the list of failure

factors derived by Eftekhari and Akhavan and used as part of the failure analysis component is incomplete and fails to recognise mostly the contextual factors such as, political climate, change absorbtion capability and vendor relationships. In addition, BPR project factors such as project priority are also not included. This is a gap and the research presented in this thesis will look at incorporating all identified factors as represented in Table 2.1. The second aspect of interest is the first stage of the CITM, namely, Before starting BPR project. This stage is discussed as being the stage where the organisation's performance is evaluated in terms of the organisation's processes and performance of the aforementioned processes against competitors (Eftekhari & Akhavan, 2013). The stage also contains steps related to creating an understanding of the organisation's structures, its performance stability and selected BPR approach. In a similar context, the researcher propounds that in order for a BPR project to be successful, a proper understanding of the organisational environment needs to be created within the context of the BPR project success and failure factors. By creating such an understanding, the researcher also suggests that appropriate steps be taken to minimise the risk of executing BPR projects, thereby increasing the possibility for success. The researcher has further developed a management approach that is later discussed in Chapter 6.

There are other models posited by other researchers, such as, the integration of BPR methods with innovation methods in order to improve the BPR design phase (Abdi, et al., 2011); integration of multiple management methods with BPR, such as knowledge management, learning organisation, change management and strategic deployment (Rrezaie, et al., 2013) ;defining a new method of conducting process reengineering by merging object orientation and knowledge based frameworks with BPR methods (Kundu , et al., 2012); the development of an iterative BPR model by integrating BPR methods with software development methodologies such as AGILE and the Spiral Model (Hussein, et al., 2014); an enterprise ontology based process reengineering approach that incorporates the need for process design to be holistic in nature encompassing the relationships between internal and external environments, staff and customers (Bahramnejad, et al., 2015). The majority of the models, however, do not give much concern to the factors that influence BPR implementations but rather go on to integrate best practices of other methods from other domains such as software development, knowledge management, learning organisation and innovation. Rrezaie et al., 2013, however, integrate specific methods to cater for specific failure factors, such as change management methods to assist with BPR change management failure factors, learning organisation to assist with improving future implementations based on continuous learning and the creation of a knowledge management strategy to improve the success of future BPR implementations. This is further supported by alternate knowledge management integration approaches (Kyupova, et al., 2009)). The focus, however, is still on the mechanics of process reengineering and the conduct of a project, thus giving very little credence to contextual factors that exist within an organisational environment.

The next section takes us to the next step of the literature review process. Entrenched BPR methods, such as Six Sigma and Lean, are discussed and reviewed in alignment with the research presented in this thesis.

2.3 Business Process Reengineering Methods

The literature review of prior work focused on how research had progressed in defining how to execute a BPR initiative and in identifying and classifying the factors that would influence the success thereof. This resulted in the output of the project influential factors that influence a BPR initiative in terms of its outcome as noted in Table 2.1. It also highlighted the fact that the majority of the prior research had focused on the technical execution of the initiative, namely, focusing on how to

reengineer or improve the organisational processes, while very few focused on organisational environmental factors. In the context of the research presented in this thesis, organisational environmental factors refer to factors that exist in an organisation independent of a BPR project, such as an organisations willingness to invest in BPR type projects, an organisation structure that includes functions, such as BPM and an organisation's appetite for scale of change. Prior research literature reviews also brought to the fore that some effort was focused on Project management or the management of the initiative itself and little to no effort was spent on understanding how to manage the project influential factors, which to a major extent determined the success of the BPR initiatives.

This then leads us to look at the literature that defines and describes the most common and formalised **B**usiness **P**rocess **I**mprovement (BPI) or BPR methods. In particular, the ensuing literature review focuses on how the various methods prescribe the management of a BPR initiative. This is then aligned with the research in terms of identifying the approaches, if any exist, that cater for the management of project influential factors that are external to the project such as organisational structures (Abdul Kader (Organisational Structures), 2013).

It has to be noted at this point that focused research has already gone into the effectiveness of these methods. Zellner, 2011, reviewed research work by various authors with the aim to prove that very little work had gone into the technical aspects of business process improvement itself, in particular the improvement of the actual business activities that form part of the refined or improved business process (Zellner, 2011). Zellner, 2011, reviewed prior research that critiqued BPI methods, such as Six Sigma and Hammer and Champy's BPR method, against the mandatory elements required by a method to highlight the fact that BPI methods do not necessarily cover, in prescriptive detail, the act of the improvement itself, and if they do, they lack a proper methodological structure that can be reused. The reviews of the BPR methods presented in this research, however, looks at the method in context of its proposed execution and its limitations in dealing with the organisation's environment. This form of review is supported by research carried out by Hussein et al., 2013. Hussein et al., 2013, reviewed BPR methods in a general context, without specifically mentioning any specific method, and concluded that the current BPR methods and associated literature fail to take into account the human factor and change management. A limitation of particular interest, as stated by Hussein et al., 2013, posits that most of the existing BPR models do not take into account the analysis of the business organisation's environment'. Hussein et al., 2013, further recommend future research in the domain of BPR related to identifying further avenues where BPR implementation breakdowns occur and how they can be prevented. Based on their critical evaluation of BPR methods and associated literature, they felt that very little practical research had been done in this area. The research presented in this thesis aligns with this view and provides further practical research into the failures of BPR implementations with the aim of proposing a management framework that would improve the success rate of BPR implementations.

This section, in addition to the contribution made by Hussein et al., 2013, will go on to review BPR methods by focusing on describing the methods and the associated management steps, followed by the research alignment component.

2.3.1 Six Sigma

As mentioned above, the literature reviews will be based on the management steps followed by the BPR method. This will ensure that focus is maintained on the relevance of the literature review to the research.

Originally, Six Sigma was a metric, which meant that once achieved there would be 3.4 **D**efects **per M**illion **O**pportunities (DPMO) (Pyzdek & Keller, 2010) (Cox III, et al., 2010). This metric was advanced by Motorola to then mean a methodology (Cox III, et al., 2010). The methodology was aimed at improving business processes, products and services in order to achieve high levels of customer satisfaction by reducing process variation, improving the throughput, reducing the defects produced on products and services by process execution and reducing the time it took to execute a process, develop a product or deliver a service (Cox III, et al., 2010).

It is very much a technical method dedicated to the improvement of processes, products and services with various associated statistical tools and techniques, but it also has two distinct management approaches. The first management approach is aimed at improving an existing process, while the other management approach is aimed at designing a new process or radically redesigning an existing process once a process has reached optimal standards and cannot further be improved to achieve the desired results (Cox III, et al., 2010) (Pyzdek & Keller, 2010). The first management approach is generally known by the acronym DMAIC, which stands for the management phases **D**efine, **M**easure, **A**nalyse, **I**mprove and **C**ontrol (Cox III, et al., 2010) (Pyzdek & Keller, 2010). The second management approach is associated with the Design for Six Sigma (DFSS) nuance and is sometimes used interchangeably (Cox III, et al., 2010) (Pyzdek & Keller, 2010). This is known as the DMADV management approach, which stands for the management phases **D**efine, **M**easure, **A**nalyse, **D**esign, and **V**erify (Cox III, et al., 2010) (Pyzdek & Keller, 2010).

While the latter phases, such as Measure, Analyse, Control, Design and Verify, focus on the technical improvement or design of processes and their implementation, the Define phase is where the planning generally takes place. This phase is predominantly aimed at producing the Project Charter where the goals and objectives of a project are identified and, once approved, will kick off the work on all the other phases (Pyzdek & Keller, 2010). In order to achieve the Project Charter, an analysis is performed on the relevant processes to highlight opportunities, which then go through a selection process via the relevant executive committee (Pyzdek & Keller, 2010). This approach, however, assumes that the organisation is geared for these projects and has an environment in place that is conducive to BPR project success and, as such, no upfront plan is in place for negative factors that might influence the success of the BPR initiative to be undertaken.

So, in summary, the DMAIC or DMADV approach was developed to ensure successful BPR project executions, however, the argument in the research presented in this thesis is that this approach is executed within an organisational environment that needs to support such an approach and enable its successful execution. How this organisational enablement is achieved is what drives the research presented in this thesis and ultimately the research recommendation.

2.3.2 Lean

Lean is more a philosophical and principled approach towards improving processes by removing what it terms as “waste” (Cox III, et al., 2010). It was advanced in Japan as part of the development of the Toyota Production System (Cox III, et al., 2010) (David, 2008) and further advanced to what is known as Lean Thinking by Womack and Jones, 2003.

Unlike most literature on Six Sigma and Lean Six Sigma Womack and Jones, 2003, do not focus on the specific technical approaches, such as Quality Function Deployment and Mistake Proofing production processes and services, but rather

suggest five principles that can be assumed as an approach towards achieving lean processes and services.

These principles are based on the concept of creating value while eliminating waste within an organisation. These principles as stated by Womack and Jones, 2003, are:

- Specify Value – This is the critical starting point for Lean and is where specific value is identified from a customer's perspective.
- Identify Value Stream – This is where the processes and services that were identified as adding the most value are reengineered by performing three management tasks, namely:
    - Problem Solving – This is where the concepts, processes, services and products are designed, engineered or reengineered.
    - Information management – This is where the scheduling and management of delivery occurs.
    - Transformation – This is where deployment of the finished product takes place.
- Make the Value Flow – This is where organisational transformation takes place in terms of supporting the new processes, services and products that have been made lean. It is about restructuring the organisation to support the outputs.
- Let the Customer Pull the Value – This is where the organisation can stop producing services and products based on forecasts but rather allow the customer to dictate execution of processes, services and products as and when they are needed.
- Pursue Perfection – This, like any BPR methodology, is about continuous improvement.

These principled approach steps described above, however, do not deal with the management thereof. There is no mention of how these should be managed, and rightfully so, as Lean is not a project management approach.

Womack and Jones, 2003, however, do provide a view as to how to create a lean organisation and the action steps (getting started, create a new organisation, install business systems, and complete the transformation) that would be required to create such an organisation. They suggest that it would take an organisation close to five years to make the "Lean Leap" and would require considerate effort in order to execute on all five steps which would include tasks such as entire organisational training, restructuring of the business and setting up systems that would support the "Lean Leap". These steps are a very complex BPR initiative that would span a long time and would probably need to be managed as such which would then require a project management approach that would be susceptible to influences that currently occupy the organisational environment.

So in summary Lean is not proposed as a BPR project management approach towards executing BPR and, accordingly, it does not cater for the understanding of BPR project influential factors.

2.3.3 Lean Six Sigma

Lean Six Sigma as its name suggests is a combination of the two different BPR approaches described above. George, 2003, describes Lean Six Sigma as:

"Lean Six Sigma for services is a business improvement methodology that maximizes shareholder value by achieving the fastest rate of improvement in customer satisfaction, cost, quality, process speed, and invested capital. The fusion of Lean and Six Sigma improvement methods is required because:

- Lean cannot bring a process under statistical control
- Six Sigma alone cannot dramatically improve process speed or reduce invested capital
- Both enable the reduction of the cost of complexity"

Furterer, 2009, describes Lean Six Sigma as:

"an approach focused on improving quality, reducing variation, and eliminating waste in an organization. It is the combination of two improvement programs: Six Sigma and Lean Enterprise. The former is a quality management philosophy and methodology that focuses on reducing variation; measuring defects (per million output/opportunities); and improving the quality of products, processes, and services. …… Lean Enterprise is a methodology that focuses on reducing cycle time and waste in processes."

As mentioned previously, Lean does not address the project management thereof and, as such, when it was merged with Six Sigma to form Lean Six Sigma, the Six Sigma management approaches were applied towards executing a Lean Six Sigma initiative by integrating the Lean Value Stream approach within the DMAIC approach (George, 2003) (Furterer, 2009). Furterer, 2009, posits a new approach namely, **I**dentify, **D**efine, **D**esign, **O**ptimise and **V**alidate (IDDOV) (a DFSS approach similar to DMADV).

The above approach of integration then meant that, just like Six Sigma, the research argues that the DMAIC or DMADV (DFSS, IDDOV) approaches were developed to ensure successful BPR project executions and would in that event require an organisation to be supportive and enable the successful delivery thereof. How this organisational enablement is achieved is what would drive the research presented in this thesis and ultimately the research recommendation.

Furterer, 2009, supports the notion that an organisation should enable the success of its Lean Six Sigma projects by implementing lessons learned from failed and successful projects. She introduces the Lean Six Sigma Project Assessment Strategy where she describes an approach for conducting a post project assessment that would improve the chances of future projects success by implementing the lessons learned on prior projects (Furterer, 2009). The phases that are required to execute a post project assessment as stated by Furterer, 2009, are:

- Phase I is to "Define an Assessment Approach" and encompasses the need for a project to identify what will be measured in terms of its successes and failures as well as obtaining management buy-in in executing these assessments.
- Phase II is to "Develop an Assessment Mechanism" in terms of how these assessments will be conducted.
- Phase III is to "Implement the Assessments" in terms of their execution as defined by the what and the how in previous phases.
- Phase IV is to "Analyse the Results" and to "Derive the Lessons Learned".
- Phase V is to "Define an Improvement Plan" that will be executed in order to ensure that future projects have a greater chance of success.

Looking at Furterer's approach above, the question then could be asked as to why do we not conduct a pre-project assessment? This approach will help to understand what factors will influence its outcome, thereby ensuring that one is able to mitigate negative influences prior to starting a project. It would also improve the chances of success and will not totally rely on the learnings of previously executed projects. As we know projects are unique endeavours and organisations

very rarely tend to be static in their composition. For example, sponsors may not be the same, team members may be new to the organisation and strategies and structures may have changed. These changes can only be understood by evaluating the current organisation in terms of its enablement of successful BPR project execution. The research is aligned to formulating an approach that would aim at creating this understanding.

George, 2003, recognises the need for an organisation to enable the successful delivery of Lean Six Sigma projects or initiatives. He proposes that prior to organisations embarking on Lean Six Sigma initiatives the organisation should be set up in such a way that it would enable the delivery of successful projects. His proposal encompasses the following four phases:

- Phase 1 is the Readiness Assessment of the organisation to determine how to structure the initiatives based on the available organisational infrastructure that would support successful delivery. This will lead to the understanding of current resource capability, project delivery capability and plan team set up and training needs accordingly.
- Phase 2 is about Engagement with all stakeholders in order to create buy-in for Lean Six Sigma. This would involve limiting the resistance to change by creating awareness on how Lean Six Sigma would benefit not only the organisation but its people as well.
- Phase 3 is the Mobilisation of teams, first wave projects and an infrastructure to support the execution of such projects.
- Phase 4 is about maintaining Performance and Control during and beyond the implementation of successful projects which includes monitoring of project execution, planning the organisation for absorbing the changes and ensuring that there is continuous improvement that will eventually transform the organisation.

The above approach, which is meant to set up an organisation so that it would be able to deliver successful Lean Six Sigma projects, is in itself a massive project and is aimed at initially setting up an organisation in such a way that it would be able to execute successful Lean Six Sigma Projects. It is indeed an approach that could possibly do just that.

So, why then the need for the research presented in this thesis? Firstly, as previously mentioned, projects are unique endeavours and organisations are very rarely static in their composition and, therefore, what would have been enabled in the past, would have been undone by changes in organisational strategy, its structures and its people. Meadows, 2008 quoted Russell Ackoff as saying:

> "Managers are not confronted with problems that are independent of each other, but with dynamic situations that consist of complex systems of changing problems that interact with each other."

This means that projects and organisations need to constantly understand their current environments before embarking on executing such projects on a continuous basis. They also need a way to do this that would consume as little effort as possible. Once certain negative influences are identified, organisations also need a guideline that would help mitigate such negative influences prior to project initiation. Organisations and projects also need to understand which project influential factors are critical in order to improve the success rates of projects, as not all project influential factors can be enabled in their entirety or even at all, given the organisations current operating models.

2.3.4 Theory of Constraints (TOC)

Cox III et al., 2010, mention that the TOC was introduced by Eliyahu M Goldratt in the mid-1980's. The TOC methodology focuses on managing system constraints, interdependencies and variability by employing the use of cause and effect logic (Cox III, et al., 2010). Its application is predominantly focused on improving organisations (Cox III, et al., 2010) in terms of achieving higher throughput, decreasing inventory and decreasing operating costs (Goldratt, 1990). As such, TOC as a method is very focused on the internal aspects of an initiative undertaken that will enable the above achievements.

TOC acknowledges that an understanding of the system, its goals and its metrics be understood before embarking on a TOC initiative (Cox III, et al., 2010), however, it does not go into detail as to how this can be achieved. This concept is in line with what the research is directed towards. It is directed towards understanding the system of a BPR project in context of its execution environment and its influential factors with an aim to mitigate negative influences.

Goldratt, 1990, proposes five steps that are required in order to improve the organisation and its processes. These are:

- Identify the constraint(s).
- Decide how to exploit the constraint(s).
- Subordinate/synchronize everything else to the constraint(s).
- If needed, elevate the system's constraint.
- If the constraint has been broken, go back to step one. Do not let inertia become the constraint.

TOC also posits that these steps can be broken down into three questions that will guide the organisation in executing these steps, especially if a constraint is not a physical one (Goldratt, 1990) (Cox III, et al., 2010). These questions are:

- What to change?
- What to change to?
- How to cause the change?

As can be seen from the above process steps, the TOC method does not focus on factors that may influence the success of the initiative. It is very focused on achieving a set of objectives that have been identified for the initiative.

However, TOC explicitly define a project management method known as the Critical Chain Project Management method (Cox III, et al., 2010). It was a narrative concept designed to resolve the issues experienced by what it terms as traditional project management issues related to duration uncertainty, task uncertainty, resource contention and poor communication (Cox III, et al., 2010). Goldratt (in Cox III, et al, 2010), did not specify any steps or method as such when Critical Chain Project Management was initially developed. These issues are once again internally focused on the project and the management thereof. It does not address the organisational influence towards a projects outcome. It does, however, mention that a project should not be initiated until a "whole kit" or "full kit" is at hand, which should comprise an approved Project Charter, all the materials necessary for executing the project and all project preparatory work to be completed. This concept is of interest as one could assume that the project preparatory work could comprise the evaluation of the project influential factors within the organisational execution environment in order to enhance its probability of success by mitigating very early on negative influences.

So in summary, TOC does not support in its method and / or execution steps the need to evaluate a project's or initiative's organisational environment in order to understand what or how the organisation can influence the outcome of said project or initiative, thereby not facilitating the opportunity for mitigating negative influences.

2.3.5 Business Process Reengineering as a method

Business **P**rocess **R**eengineering (BPR) is used by the research presented in this thesis to encompass a business process improvement or reengineering effort, project or initiative, as well as the associated methods, tools and techniques. This should be noted in order to avoid confusion within this section. It is for this reason the heading is proposed as "Business Process Reengineering as a method".

The BPR concept was made prevalent due to the work by Hammer and Champy, 1994, and was considered as a management approach that would promote radical organisational improvements and / or changes (Harvard Business School, 2010). Hammer and Champy, 1994, however did not specify any execution steps or methods that would guide the execution of such an endeavour. Instead it focused on the concept of business reengineering and what it meant to reengineer the corporation. This was the central theme of the book and it defined this concept as:

"Reengineering is defined as the fundamental rethink and radical redesign of business processes to generate dramatic improvements in critical performance measures -- such as cost, quality, service and speed" (Hammer & Champy, 1994)

One interesting statement put forward by Hammer and Champy, 1994, is that:

"Every company's reengineering program must be unique if it is to achieve anything substantial. There are no guaranteed-to-work or step-by-step prescriptions that can be followed in reengineering" (Hammer & Champy, 1994).

In other words, there is no one method for success and each organisation should pursue the reengineering effort based on their context. In saying this, however, it does not mean that there should be no method at all. Methods are used as guiding steps that can be tailored based on an organisational need. This concept or idea is suggestive in nature and could be interpreted to imply that an organisation should understand the execution environment and execute their BPR initiatives accordingly, which once again aligns itself with the research.

Further to this Hammer and Champy, 1994, suggest five guidelines towards successful execution, namely:

- Always start with the customer and work backwards.
- Move fast.
- Tolerate risk.
- Accept imperfections along the way.
- Don't stop too soon.

Within these guidelines, Hammer and Champy, 1994, recognise the need to mitigate resistance to change by planning to execute an initiative that spans a lifecycle no more than 12 months, as resistance to change is a critical factor to overcome in order to ensure success. This idea is probably a concept that needs to be explored earlier on in a project's initiation or even prior to its initiation, as this could lead to project failure. Hammer and Champy, 1994, thus indirectly support the need for an organisation to understand factors that could influence a project's success before its initiation, thereby creating an opportunity for organisations and project managers to mitigate such negative influences.

Following on from Hammer and Champy's work, other books were written that suggested step by step approaches that would facilitate a successful BPR attempt. The next few paragraphs briefly outline some of the suggestions within the other books, also including indications as to whether these suggested BPR management approaches cater for the management of project influential factors.

Harvard Business School, 2010, suggests six phases to the execution of BPR initiatives or what it terms BPI initiatives. These phases are:

- Planning, which comprises the selection of the business processes requiring improvement, the scope of the work and the selection of the team that will execute the work.
- Analyses of the processes in order to identify what can be improved.
- Redesign of the processes selected for improvement based on analyses outcomes.
- Acquire resources that would facilitate the implementation of the redesigned process.
- Implement the redesigned processes.
- Engage in continuous improvement.

These steps noted by Harvard Business School, 2010, however, do not suggest any considerations that should be given to understanding organisational factors that could influence an initiative or a project's success. It focuses all steps on the project itself and the internal aspects of a project, such as establishing project teams, defining the scope and realistic scheduling. One item worth mentioning is that, in line with Hammer and Champy, 1994, they also suggest that resistance to change is critical to the implementation of initiative and ultimately the success thereof. They suggest proper stakeholder involvement in the process redesign phase as well as effective communication prior to implementation to acquire buy-in and mitigate the negative influences of this factor. This approach is contrary to what the research is suggesting in terms of upfront (prior project initiation) project influential factor analysis and mitigation.

Manganelli and Klein, 1994, suggest a methodology that they call the "Rapid Re Methodology". They put forward that their approach to creating a BPR methodology should "guide" the user in understanding their "road map" that is required in order for them to successfully conduct a BPR initiative. They mention that the key to the successful use of a methodology is not in its rigid execution but rather lies in the analysis and thinking of the user when execution of such methodology takes place.

The steps that they propose which serve as a guideline for prospective users, are framed around five stages. Stage 1, Preparation, is similar to any project methodology (c/f Section2.5) as its focus is on creating the goals and purpose of the initiative while stating high level costs, risks, schedule and organisational change requirements. Stages 2 to 5 (Identification, Vision, Solution and Transformation) are dedicated towards the analysis, design and implementation of the proposed reengineered processes (Manganelli & Klein, 1994). The focus for the research presented in this thesis is in understanding how the project influential factors are identified and managed early on in a projects lifecycle or even prior to its initiation, therefore Stage 1, Preparation, is elaborated upon further.

The Preparation stage has four tasks, namely; recognise need, develop executive consensus, train team and plan for change (Manganelli & Klein, 1994). The "develop executive consensus" task is similar to that of the TOC's 2-day executive workshop and aims at creating alignment between all senior to executive stakeholders on the scope of the initiative and the team that will be required to

achieve its intended goals. This concept of stakeholder alignment and team preparation caters for early on mitigation of negative influences from unclear scope as well as incoherent teams. Further to this, the task of change management looks at internal and external environmental assessments. Manganelii and Klein, 1994, posit that there should be an understanding of the organisations current structure and culture, but do not go into detail as to how this can be understood. The focus is also on understanding the current organisational structure, thereby assuming that it will remain static through the journey of the BPR project or initiative. They also do not go into detail on what they mean by organisation culture, which is a gap that needs further investigation.

Mangenelli and Klein, 1994, towards the end of their literary journey state that,

"Failures in BPR projects have usually come from mistakes in defining, organizing, or conducting the project",

and suggest the following nine rules (or what they term "commandments"):

- Have a clear definition of what BPR means and what the goal of the BPR initiative is.
- Be realistic about what can be achieved within constraints such as time and cost.
- Have a plan of execution and implementation.
- BPR Projects should not take too long. A 12-month window should be adequate to ensure success of change.
- Have a strong leadership support in the form of a dedicated and committed sponsor.
- Stick to the original scope of the project.
- Technology is the enabler.
- Do not overthink the discipline and the intention of BPR.
- Follow a methodology as it is a guideline to achieving success.

As can be seen, in the above, no mention is made of failures due to organisational environmental influences, which exist for the pure reason that these are organisational factors that are independent of a BPR project yet relevant to its success. The research is focused on elaborating this understanding of the organisational factors and their influence on a BPR initiative.

A unique literary endeavour that strengthens the need of the research presented in this thesis, particularly the focus on project influential factors prior to project initiation comes in the form of Sethi and King, 1998. In their book Sethi and King, 1998, reviewed various research papers that focused on the BPR discipline and its various aspects inclusive of BPR principles and methods and the management thereof. These two aspects align perfectly with the research endeavour. Let's look at the first aspect, which is the BPR method as proposed by Rohit Talwar (in Sethi and King, 1998). Talwar (in Sethi and King, 1998), positions that most BPR initiatives involve six steps:

- Building the future state or vision of the organisation.
- Planning the achievement of that vision.
- Analysing the current status of the organisation inclusive of structure and processes.
- Redesigning business structure and processes in alignment to achieve future state.
- Implementing the redesigned state.
- Measuring the benefits and sharing the lessons learned.

The first step, which centred on the strategic planning for the organisation, looks at the organisation's "Risk Assessment" (Sethi & King, 1998) to determine if the organisation is ready for further changes. This aligns with the research principle of early identification of project influential factors, particularly those of the organisation itself prior to embarking on any BPR initiative. This task also known as "readiness for change" (Sethi & King, 1998) , as resistance to change is seen as a dominant factor when executing a BPR initiative, looks at creating alignment between all stakeholders on what initiatives are required and what their goals are as well as taking into account if the organisation is not experiencing "initiative fatigue" (Sethi & King, 1998). It describes the concepts and the process to overcome the resistance to change factor. Talwar in Sethi and King, 1998, recommends the following steps be taken:

- Building vision and gaining commitment by ensuring top management buy-in, as well as addressing non buy-in of the organisation's vision by questioning future involvement of non-buy-in participants.
- Marketing of the projects that are undertaken to create organisation wide understanding and support.
- Continuous risk assessment that will identify, analyse and manage risks as they arise while executing the project. Two primary sources of risk are the change initiative itself and the organisation's ability to successfully execute a change.
- The use of standard project and business process management tools and practices.
- Creating a single body of authority to oversee, guide and resolve issues that arise for all projects.
- Effective people management disciplines also need to be in place in order to motivate and create a high functioning team.

Further to the above mentioned aspect of the BPR method that puts forward steps towards managing and mitigating resistance to change, as authored by Talwar (in Sethi and King, 1998,) Sethi and King, 1998 included the second aspect that the research presented in this thesis will focus on, namely, the management of BPR.

As part of the BPR management aspect, Caron et al. (in Sethi and King, 1998), put forward a case study where key lessons were documented on the execution of BPR initiatives within the CIGNA Corporation. The one lesson that is aligned to the research presented in this thesis is that all BPR should be tailored to the characteristics of the organisational environment. This lesson addresses the need for understanding whether or not an organisation is capable of undertaking a complex BPR initiative based on its own competencies and structures. A further lesson which is a common theme among most BPR approaches, is that initiatives should not be long drawn out activities but rather short term, approximately 12 months, focused BPR initiatives as this would ensure a more successful change implementation. In addition to this case study, Bashein et al. (in Sethi and King, 1998), put forward a paper that focusses on understanding what the preconditions for BPR success are and how to prevent failures.

Bashein et al. (in Sethi and King, 1998), put forward the need for an approach that would identify organisational influences on projects and mitigate them prior to the initiation and execution of any BPR initiatives as they state as part of their research outcomes:

"Obviously, more research is needed to support confident recommendations for action". (Sethi & King, 1998)

This statement is addressed particularly towards the understanding of why BPR projects fail and how this can be avoided by doing something prior to the execution

of BPR projects to improve its successful execution. The research was interview based and was addressed towards understanding the obstacles to BPR success and whether their absence is sufficient to prevent failure. As the research was interview based, the authors do posit a need to validate and test these findings against case studies. This is relevant, as it positions the research presented in this thesis as valid and as a contribution towards the knowledge of the BPR discipline. The research presented in this thesis will test the influence of project influential factors in a real life context (case study) and determine to what extent these factors influence the success of a BPR project. It will also put forward a recommendation in the form of a management approach towards improving the rate of executing successful BPR projects by focusing on what Bashein et al. (in Sethi and King, 1998), term as “preconditions for BPR success”.

Bashein et al. (in Sethi and King, 1998), propose an approach that will deal with the absence of positive preconditions. This approach is identified as:

- Senior Management Commitment and Support. This must be obtained prior to project initiation and sustained during project execution. There needs to be the existence of a project sponsor and an executive level.
- Realistic Expectations. Executives should understand what BPR is and set realistic goals and objectives in accordance with what they are trying to achieve.
- Empowered and Collaborative Workers. As there are cross functional processes it is helpful to have a collaborative work style well established before undertaking any BPR initiatives.
- Strategic Context of Growth and Expansion. BPR projects that are seen as supporting organisational growth and expansion are more likely to succeed than cost cutting BPR initiatives.
- Shared Vision. All BPR initiatives should be aligned with the strategic goals of the organisation and this should be communicated on an ongoing basis.
- Sound Management Processes. Management processes (not all inclusive) associated with IT, people, finance and organisational planning that are well established and stable operationally lead to a more successful execution of a BPR project.
- Appropriate People Participating Full-Time. Project Teams should be dedicated and this is inclusive of all selected nominations from business areas impacted by the BPR initiative.
- Sufficient Budget. The organisation should have adequate dedicated budget towards BPR initiatives in order to improve the chances of success.

In addition to the above preconditions Bashein et al. (in Sethi and King, 1998), further classify that collaboration at a management level could delay BPR initiatives and even make them impossible to complete. This is due to the fact that decision making is part of a consensus group rather than a single executive sponsor making decisions for the BPR initiative. Other factors that negatively impact a BPR initiative’s execution to success prior to its initiation are unhealthy budgeting considerations, organisation change fatigue due to too many projects being executed simultaneously and the animosity that may exist between IT and human resource specialists (Sethi & King, 1998). These findings are certainly worth testing in a case study research setting as recommended by Bashein et al. (in Sethi and King, 1998).

Back to the approach suggested by Bashein et al. (in Sethi and King, 1998), in dealing with negative influences on BPR project successes. Bashein et al. (in Sethi and King, 1998), suggest the following three steps:

- Execute a smaller initiative that is guaranteed success in order to improve buy-in for further larger more complex BPR initiatives.
- Train all impacted stakeholders on being change ready and create self-empowerment over and above the training on BPR and the redesigned reengineered processes and jobs.
- Ensure that IT and Human Resources are involved from the beginning of all BPR initiatives including the selection of such initiatives.

In summary, Business Process Reengineering as a method does acknowledge the need for understanding how BPR project influential factors will influence a BPR project and in doing that has made a few suggestions in achieving such an understanding, however, further research is required in understanding how such factors influence a BPR project, to what extent do they influence a BPR project and how can these factors be identified, analysed and mitigated for negative influences. The need for which is supported by Bashein et al. (in Sethi and King, 1998).

The next section focuses on two dominant project management techniques and methods emanating from the research case study.

2.4 Project Management Methodologies

A literature review was conducted on well-known project management methods and standards, that were adopted by the bank for which the case study was conducted. These currently are the **P**roject **M**anagement **P**rofessional (PMP), and the PRINCE 2 methods and standards (Singh & Lano, 2014).

The focus of the literature review was on identifying how the project execution processes catered for project influential factors, if any, as part of the "best practice" approaches towards executing a generic project. Note that a BPR project is a specific type of project focusing on the creation, improvement and sustainment of business processes. The literature reviews also provided an opportunity to create research alignment. In addition, literature reviews were conducted on prior research in the domain of project management that focused on factors impacting the success rate of projects executed.

2.4.1 Project Management Professional (PMP)

The PMP standard is a standard published by the **P**roject **M**anagement **I**nstitute (PMI) and is currently in its fifth edition. It describes in detail the tools and techniques that are associated with project management in dealing with the relevant knowledge areas (project integration, scope, time, cost, quality, human resource, risk, communications, procurement and stakeholder management) of a project manager. It also details a life cycle inclusive of the process groups (initiating, planning, executing, monitoring and control and closing) for executing projects.

As part of the detailed descriptions the standard also acknowledges the fact that there are certain factors that influence the success of a project that are not controlled by the project manager or the project. It terms these factors as "Enterprise Environmental Factors" (Project Management Institute, 2013) (Project Management Institute (PgMP), 2013) (Project Management Institute (OPM3), 2013). The definition of "Enterprise Environmental Factors" is:

"Enterprise environmental factors refer to both internal and external factors that surround or influence a project's success. These factors may come from any or all of the enterprises involved in the project. Enterprise environmental factors may enhance or constrain project management options and may have a positive or

negative influence on the outcome. They are considered as inputs to most planning processes." (Project Management Institute, 2013)

These factors are considered unchangeable by a project manager and his team while executing the project. Three of these factors are of particular interest to the research as they integrate the organisation with the project. Remember that the research argues that a project is executed within an organisational environment and as such the organisational environment should be considered when embarking on a project, not simply in identification but also in mitigating negative influences. These three factors are:

- organisational culture
- organisational structure
- organisational political climate.

Organisational culture is defined as the cultural norms that are established within an organisation over time and that are centred on establishing, initiating, planning and executing projects (Project Management Institute, 2013). Some of the organisational culture factors address leadership styles, organisation risk appetite and operational policies and procedures. The PMP standard acknowledges that this is a critical factor for a project's success and as such a project manager should know who are the decision makers or most influential leaders in an organisation that could critically influence the project's outcome. This concept is addressed by the stakeholder management knowledge area and elaborates on the use of a stakeholder list (Project Management Institute, 2013) or register (Project Management Institute (PgMP), 2013). However, leadership is only one aspect of culture; there is also the risk appetite portion. The PMP standard does provide a detailed risk management framework as part of its risk management knowledge area. The steps include identifying, analysing, response planning and monitoring and controlling project risks (Project Management Institute, 2013) (Project Management Institute (PgMP), 2013). From the research perspective, risk appetite is closely linked to the organisation's appetite to absorb change and at a rate that is acceptable so as to enable a project's successful delivery. Therefore, the researcher argues that before a project begins the project manager should understand if the proposed project's changes can be implemented and absorbed at a rate acceptable to ensure project success, which is a specific element not contained within the PMP standard.

Organisational structure is defined as the current or existing structure of an organisation that includes management styles and structures, and business functional and operational areas (Project Management Institute (OPM3), 2013) (Project Management Institute, 2013) in which the project would reside. From this definition it can be noted that the standard assumes a static organisation. This, however, is not always true (Abdul Kader (Organisational Structures), 2013) (Abdul Kader (ORoI), 2013) which then results in projects being executed in a fluid structure that then negatively influences the outcome of a project. Fluid organisational structures are not easily identifiable as they are closely guarded strategic initiatives within an organisation as they are considered to be major change initiatives with a major people impact. A project manager has to identify with the concept that an organisation is only static while it is static and when it changes, a mitigation plan should already be in place to minimise its negative influence on the outcome of a project. This concept then identifies a gap in the literature which will be addressed by the research (c/f Chapter 4).

Organisational political climate is not defined within the PMP standard; however, an assumption can be made that it refers to business politics within an organisation (c/f Chapter 3) which infers that stakeholder management is very important as stakeholders can negatively or positively influence the success of the project. This

is noted by the PMP standard (Project Management Institute, 2013) (Project Management Institute (PgMP), 2013) (Project Management Institute (OPM3), 2013). Some of these stakeholders are identified as being the project sponsor, the organisational impacted business unit managers and their teams as well as project delivery partners (Project Management Institute, 2013) (Project Management Institute (PgMP), 2013). As mentioned earlier, the PMP standard does cater for stakeholder management.

The PMP standard, as part of the planning process group, suggest the need for the project manager to identify what these enterprise environmental factors are in order to plan for a successful project (Project Management Institute, 2013). It outlines certain outputs and products that would position these enterprise environmental factors for consideration when making a decision on whether a project should be approved or not. These products are the Business Cases and Feasibility Studies, which in practice should contain the identification of the Enterprise Environmental Factors (Project Management Institute, 2013) (Project Management Institute (PgMP), 2013). However, in relation to the three factors, namely, organisational culture, organisational structure and internal political climate, the researcher argues that the organisation should enable the success of the project even before it is initiated by not only identifying whether these factors have a negative influence on the outcome of a project but also mitigate their negative influence.

Even though the PMP standard is a widely acknowledged project management methodology and framework there is a well-known practised project management method known as PRINCE 2. The PRINCE 2 method as it relates to the research is described next.

2.4.2 PRINCE 2

Before the PRINCE 2 project management method is reviewed and aligned with the research, it is worthwhile to note the difference between PRINCE 2 and PMP.

PRINCE 2 is a project management framework and method that prescribes a step-by-step approach to execute a project from start to finish by highlighting what steps are required by when and by whom (Turley, 2010). It does not provide detailed descriptions of tools or techniques or the project management profession. For example, it stated as a step that estimation is required but does not cover the tools or techniques required to conduct project estimation (Turley, 2010). PMP, however covers a very broad spectrum of tools and techniques required to fulfil the steps it identifies as part of executing a project. PMP does not specifically prescribe who needs to execute which step and in which sequence either, but rather provides a view that steps are iterative even though they are performed in the relevant process groups. (Turley, 2010) (Project Management Institute, 2013) (Project Management Institute (PgMP), 2013).

Returning back to PRINCE 2 and how it relates to the research, PRINCE 2 is an acronym for **Pr**oject **In C**ontrolled **E**nvironments and was developed by the United Kingdom government agency, the Office of Government Commerce (Prince2.com, n.d.). PRINCE 2 as mentioned above is a prescriptive project management method and it is currently the de facto standard for managing projects within the United Kingdom government and is also used extensively internationally (Prince2.com, n.d.). This method was adopted by the Bank as a means of managing the BPR projects, hence it is crucial to understand how this method deals with factors, either internal or external to the project, that may have a positive or negative influence on a project's outcome.

PRINCE 2 as a method focuses on the internal aspects of a project as it determines its success by the ability of a project manager to deliver within the specified tolerances of project time, cost, quality, scope, benefits and risk. (Turley, 2010). Because it is so internally focused it identifies that a project most likely fails due to:

- insufficient planning of the project
- lack of communication
- inadequate estimation of time and cost of delivery. (Turley, 2010)

These factors, however, do not explain the concept of a project being managed within an organisation and as such how will it be influenced by certain factors which are outside the domain of a project but reside in the organisation within which the project is being executed (factors such as organisational culture and fluid organisational structures (Abdul Kader (ORoI), 2013) (Abdul Kader (Organisational Structures), 2013)).

PRINCE 2, however, does subscribe to the principle that a project should be tailored to suit its environment (Turley, 2010), and just like the PMP standard, it does define the need for projects to be approved based on a Business Case, which should outline the project's likelihood to succeed by identifying potential risks associated with executing the project (Turley, 2010).

Tailoring a project to suit its environment is approached from two different angles. The first angle is to adapt the PRINCE 2 method so that it suits the organisation in terms of its structures, tools, policies and procedures (Turley, 2010). The second angle is to tailor the PRINCE 2 method so that it caters for the type of project in terms of its size, complexity and risk profile (Turley, 2010). The first approach which is centred on identifying the current organisational operating environment in order to ensure that the PRINCE 2 method operates within it is a critical component that aligns with the research. According to Turley, 2010, a project cannot run efficiently if a project method is followed blindly, which he terms as "robotic" project management. He also terms project tailoring as a means by which a project can achieve a good balance between project control and project administration.

Tailoring a project as defined by PRINCE 2 is still project internally focused as it still approaches tailoring by means of changing how the prescribed project processes are to be executed based on the project itself as it relates to size, complexity, risk and organisational fit. Even though tailoring as a principle is well received, PRINCE 2 still lacks the approach whereby a project manager and an organisation can understand the organisational environmental factors that are part of the organisation and that would negatively or positively influence a project's outcome. Hence, PRINCE 2 does not cater for an opportunity for project managers to mitigate such influences prior to the initiating of a project.

Recent research has been conducted in the domain of project management where focus was placed on improving the success rate of executed projects. The next section provides a literature review in order to identify if the research integrates project influential factors in their recommended approaches and if the research considers the impact of the organisational environments influence on the success or failure of executed projects.

2.4.3 Literature Review – Prior Research on Project Management

As mentioned above, prior research has been conducted in the domain of project management with the aim of improving the success rate of executed projects. Research in the domain of project management, however, generally focused on IT

type projects (Singh & Lano, 2014). Even though this is the case, consideration was also given to reviewing literature pertaining to construction type projects as there are similarities between their critical success factors (Varajão, et al., 2014) . For the purposes of the research presented in this thesis, the types of projects were not a concern, as the researcher intends to draw on the key insights and conclusions presented in these papers with the aim of aligning them to the research presented in this thesis.

Singh and Lano, 2014, consolidated a literature review of over 70 journal papers published between 2000 and 2011. The papers covered aspects on project management methodologies, empirical and statistical analysis of successes and failures, project management maturity models and impacts and effects of leadership / management on project successes. The literature review which covered the aspect on empirical and statistical analysis of successes and failures, shows that a critical influential factor is the organisational structure (Singh & Lano, 2014). A definition of what is meant by organisational structure, however, was not present. Allen et al., 2014, conducted an empirical study on two projects, that represent a successful and a failed project, respectively. They also provided a definition of organisation structure when they found that the external influential factor was critical to a project's success (Allen, et al., 2014). Two elements presented as part of the external influential factor were, organisational structure and organisational influence. Allen et al., 2014, suggest that, organisational structure refers to the type of structure an organisation implements, namely; functional, projectised or matrix, with each representing a level of influence a project manager has in executing the project. The research presented in this thesis will look at evaluating the factor organisational structure in more detail with relevance being placed on BPR project types that are executed within a financial industry setting.

Organisational influence refers to the degree of influence and authority a project manager has in executing the project as determined by the organisational culture exhibited by the organisation's leadership with respect to support and commitment. Amponsah, 2012, dedicated his research to understanding how culture would influence the success of projects being executed, in particular, projects that span multiple industries within the geographic location of Ghana (Amponsah, 2012). He concluded that culture, determined by biodiversity of individuals, their geographic location, their personal motivations and their integration and interaction within their organisations, had a critical influence on the success of projects within Ghana. By this one can infer that culture determines behaviour and behaviour determines outcomes. Behaviour in terms of organisations is a research area put forward by Kwak and Anbari, 2009. They suggest that since early 2000 research in this area has dwindled (Kwak & Anbari, 2009). The research presented in this thesis will also explore organisational behaviour within the context of BPR projects executed in a financial institution.

In addition to the analysis of critical success factors research was also conducted in terms of putting forward frameworks and recommendations that would support the rate of success of projects. Shane et al., 2012 defined the 5DPM (5 Dimensional Project Management) framework. In addition to the technical, schedule and cost project management dimensions, they added context and financing as dimensions to project management where context refers to the external influences associated with projects, such as, environmental, stakeholders, global and legal. They suggest that the context of a project be understood early on in the project lifecycle in order to reduce negative influences by planning appropriately. An alternative, yet similar planning approach is suggested by Arabzad and Shirouyehzad, 2012. They consolidated a list of success factors into a framework and by using a SWOT analysis they went on to claim that organisations can improve the rate of successful projects because "….any project

can be successful by removing weaknesses, considering threats, maintaining existing strengths and utilizing opportunities" (Arabzad & Shirouyehzad, 2012). These types of recommendations to improve project management successes in the IT and construction domains are relevant also to the BPR domain as the BPR methods such as Six Sigma and their attributed project failure factors can be resolved by implementing project management approaches (Kulkarni, et al., 2007).

The next section will provide a summary of the literature reviewed.

2.5 Summary

As mentioned, this chapter focused on how certain well known and adopted BPR and project management methodologies recognised and dealt with project influential factors. Within the context of the research, this focus was continuously alluded to as part of each literature review section above in order to maintain alignment and to highlight why the research is warranted.

As mentioned previously, the majority of the reviewed research literature gave very little credence to organisational context factors such as management structures, political climates and the organisations capability to absorb demands for change. Nisar et al, 2014, and Grau and Moormann, 2014, suggest that future empirical research be conducted on these aspects. Furthermore the Reseacher noticed that no credence was given to the fact that organisations of today are faced with continuous uncertainty and rapid change, resulting in continous reassessment and direction changes (Alas, et al., 2012). This gave rise to the question as to whether prior research into BPR project influential factors, as consolidated and represented in Table 2.1, is exhautive or are there gaps? The researcher empirically investigated this aspect as part of the case study work presented in Chapter 4. In addition, prior research into BPR execution approaches also revealed gaps associated with identifying those factors which negatively contribute towards an organisation's readiness for BPR (Hussain, et al., 2014).

In reviewing documented BPR methods, it was also found that the majority of the methods focused on the execution of a project once it had been approved and the method itself focused on the process domain and not so much on the project domain. That being said, there is acknowledgement for concepts like environmental assessments (Manganelli & Klein, 1994) within the initiation component of a project and as part of setting up an organisation (George, 2003) for the successful execution of BPR initiatives. These concepts, barring two components, are very much in alignment with the research. The first component is that the researcher argues that before any project can be approved or even initiated the organisation should conduct an assessment of the project influential factors based on priority and criticality in order to appropriately mitigate negative influences thereby improving a project's chances of success. This aligns with recommendations for future work made by Hussein et al., 2013.

The second component is that the recommendations put forward by authors like George, 2003, are very intensive and are more dedicated towards moving an organisation into embedding cultures like Lean which inherently will take years to achieve. Organisations then need a more practical approach that will help them understand what BPR project influential factors are, what are critical for the success of such initiatives, and how they can balance the negative influences of these factors, once identified, so that the chances of success are improved without having to embark on a long journey to radically change the organisation's operating model or culture.

The first component mentioned above applies to the reviewed project methodologies as they also recommend the concepts of environmental

assessments (Project Management Institute, 2013) (Project Management Institute (PgMP), 2013). The difference is that the environmental assessments are considered as part of the feasibility and or business case component, which is institutionalised to allow executive committees to make decisions on whether a project is viable for execution or not. The project methodologies also do not give detailed thought on the concept of project preconditions as described by Bashein et al. (in Sethi and King, 1998).

Bashein et al. (in Sethi and King, 1998), recognises the idea of analysing preconditions for project success in order to be able to appropriately plan for negative influences prior to initiation of a project to improve its success and suggest that more work in this area is required in order to provide a more formal recommendation. This concept is what the research presented in this thesis aims to take further as part of improving the success rate of BPR projects being executed within the financial industry.

The next chapter will focus on the research design and methodology that will be employed to achieve its outcomes.

3 Research Design and Method

3.1 Introduction

Selecting a research methodology can sometimes be a conundrum due to various methodologies in existence that can be broadly categorised as quantitative (Creswell, 2009) (Leedy & Omrod, 2010), qualitative (Creswell, 2009) (Leedy & Omrod, 2010) or mixed method (Creswell, 2009). Thus, before embarking on the research design, the researcher has to align the philosophical approach with the intended objectives of the research in order to explain the selection of the research design and its associated strategy and method (Creswell, 2009). Figure 3.1 defines a framework developed to achieve the above, based on Creswell's, 2009, "A Framework for Design" and Carter and Little's, 2007, "The Contributions of Method, Methodology, and Epistemology to Qualitative Research".

Figure 3.1 was adapted from Carter and Little, 2007, and Creswell, 2009.

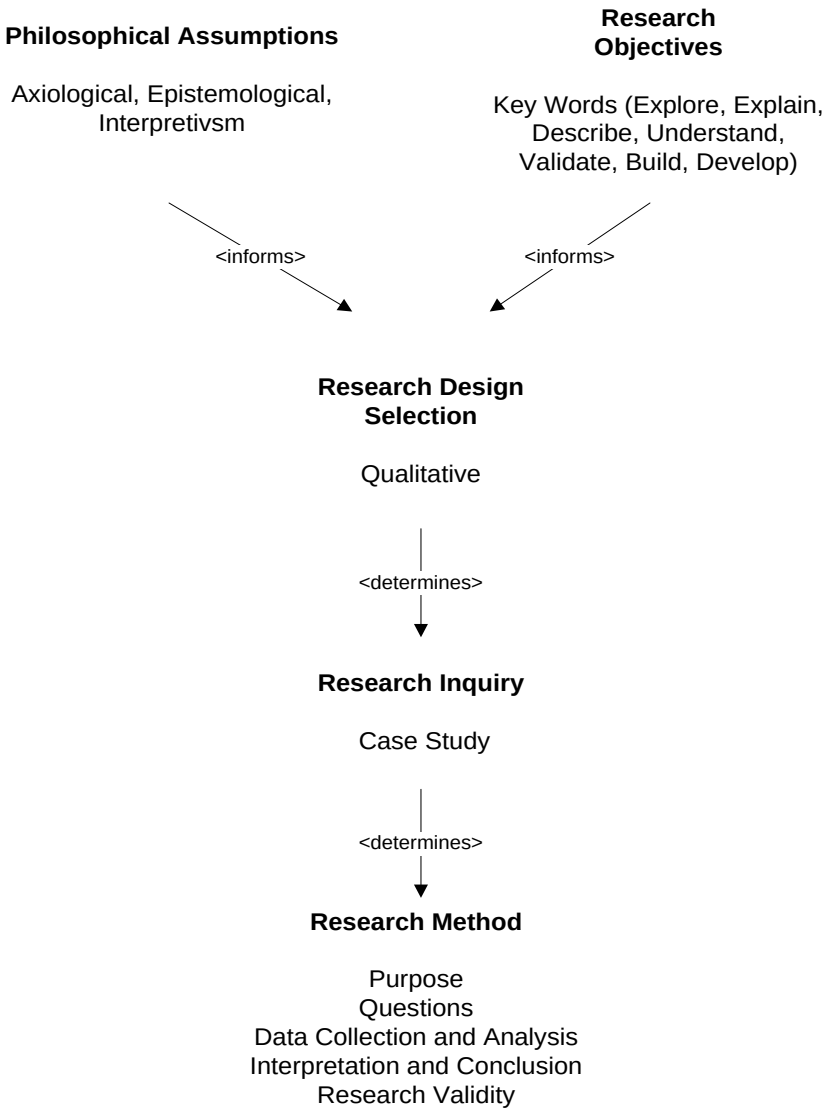


Figure 3.1: Research Design Framework

Only four of the five areas depicted in the Research and Design Framework, namely, Research Objectives, Philosophical Assumptions, Research Inquiry/Strategy, and Research Method will have a description of what it means followed by its application. The reason for only describing the four highlighted areas above is that the fifth area of concern, Research Design Selection, is an outcome of Research Objectives and Philosophical Assumptions. This outcome is then used as the basis to determine the relevant strategy for inquiry. The Research method will also be discussed in this chapter.

3.2 Research Objectives

Research Objectives, as posit in the research design framework, refer to the alignment of the research objectives to a research design as supported by Carter and Little, 2007, when they suggest that research objectives influence the selection of a research methodology. The purpose of the research is to some extent the heart of the research objective, therefore key words were selected from the purpose of the research and matched with research methodology literature. The reason for selecting this approach is inherent in the research literature narratives themselves. Across various research methodology literature (Creswell, 2009) (Yin, 2009) (Leedy & Omrod, 2010) words such as “exploratory”, “descriptive”, “explanatory”, “validate”, and “build” are used to describe the reasons for selecting a particular research methodology over another.

From the aforementioned purpose, three key words stand out, namely “observe”, “understand” and “derive”. These three key words can be used to direct the selection of a suitable methodology.

Observation advances the need for a real life context, and dictates that the researcher be involved in events forming part of a phenomenon that is executed under a real life situation. The researcher can choose to participate and observe such events with the intent to understand and interpret the phenomenon that has taken place over a lengthy period of time. Qualitative research is advocated to suit research undertaken within natural settings (Leedy & Omrod, 2010) and real life context (Creswell, 2009) (Yin, 2009) (Leedy & Omrod, 2010) where deep understanding of a phenomenon (Leedy & Omrod, 2010) is required over a lengthy period of time (Creswell, 2009) (Yin, 2009) (Leedy & Omrod, 2010). Thus using the first two key words, namely observe and understand, a qualitative methodical approach would be suitable.

Leedy and Ormrod, 2010, suggest that Qualitative research serves one or more purposes of describing, interpreting, verifying and or evaluating a phenomenon. The purpose of interpretation is defined as being able to enable the researcher to gain new insights, develop new concepts or theoretical perspectives and discover problems existing within and for a particular phenomenon (Leedy & Omrod, 2010). The keyword, ‘derive’ can be replaced with the synonym ‘develop’ and can be directly intertwined with the interpretive purpose. Remembering that the research advances the outcome of a BPR project execution methodology, which alludes to new concepts arising from the resolution of known problems within a particular phenomenon, a positive suggestion can be made to once again select a qualitative methodology.

Therefore, when designing the research, a qualitative design approach was put forward, as no quantitative research objectives were proposed that would involve statistical procedures and variable relationship examinations.

A mixed method approach involves the use of both quantitative and qualitative designs yielding both quantitative and qualitative data (Cameron, 2011) (Hall, 2012) (Terrell, 2012). As stated above the need for the use of a quantitative design

was ruled out. In addition, the research will only yield qualitative data and lends itself to a qualitative data synthesis approach, therefore the mixed methods approach was also ruled out for use.

3.3 Philosophical Assumptions

In order to further inform and substantiate the selection of a research design, it would be prudent to reflect on the ontology and epistemology (Creswell, 2009). This is due to the fact that researchers often bring their own philosophical assumptions and beliefs to their research (Creswell, 2013). These philosophical assumptions, ontologies or epistemologies and beliefs have been engrained by our experiences and ultimately lead us to the selection of our theories that guide our research (Creswell, 2013). Creswell, 2013, suggests that before embarking on a discussion of the philosophical assumptions the researcher should reflect on their beliefs being brought into the research as well as how their beliefs have been shaped.

3.3.1 Axiological

Axiological assumptions are characterised by qualitative research wherein the Researcher makes known his values about the study as they inherently influence the research questions and research design (Hays & Singh, 2012). This is in keeping with the above-mentioned statement where the beliefs of the researcher are brought into the research. The following paragraphs highlight the academic and practical experience influences on the values and beliefs the researcher brings into the research presented in this thesis.

The researcher brings to the research 17 years of practical work experience of which over 10 years have been spent on projects related to BPR within a financial institution. As part of the 10 years, the researcher has seen more failed projects than successful projects. For the purposes of the research and to aid in clarification, the researcher classifies failure of projects as projects which do not successfully deliver all scoped functionality and requirements or the project was delivered later than planned for or the project was delivered over budget or a combination thereof without the usage of formalised change control processes. Failed projects will be further classified as those projects that have been cancelled prior to delivery, irrespective of cancellation reason. Success, on the other hand, in the context of the research presented in this thesis, refers to delivering the BPR project on time, on budget, with the agreed scope or by managing any deviation by the use of a formalised change control process.

The classification of failed versus successful projects is supported by Standish Group, 1995. They classify three types of projects which they term “resolution types”. The first types support the classification of successful projects, as they deem successful projects to be projects which deliver on time, on budget and by delivering all functionality and features. The researcher has added “managing any deviation by the use of a formalised change control process”, as experience in the project industry has taught the researcher that the organisation executing a project will classify its success based on the last change request which had a stated impact on time, budget and scope. In terms of failure, Standish Group, 1995 qualifies challenged and impaired project types. Challenged projects are projects that have been completed yet have challenges in coming in on budget, on time and or by delivering fewer anticipated features and or functions (Standish Group, 1995). Impaired projects are those project types that have been cancelled prior to completion (Standish Group, 1995). As mentioned in the previous paragraph, these types of projects, challenged and impaired, which are not termed successful are classified as the opposite of success, which is failed.

Based on his practical experience, the researcher also holds the belief and philosophical assumption that project failure is also determined to some extent by the attributes of the organisation, such as organisation behaviour and culture (Abdul Kader (Organisational Structures), 2013).

3.3.2 Epistemological

Expanding further on the topic of philosophical assumptions, epistemological assumptions are based on the definition of, “how knowledge is known – through the subjective experiences of people” (Creswell, 2013). This assumption is tied to the close nature between the researcher and research participants, wherein field studies are undertaken at a working environment (Creswell, 2013). The researcher’s epistemological assumption is that knowledge on the BPR project phenomenon will be gained by observing BPR projects within a real life context. A latter epistemological assumption is that the researcher is familiar with the work environment and the research participants themselves, therefore allowing them to expose naturally the events that would occur. A counter to this assumption is that research participants forming part of the BPR projects being observed would behave unnaturally thereby diluting the research findings. This counter argument however can be overcome by exposing the researcher to the field work for a long period, thus allowing the researcher to get to know the participants, thereby getting to know what they know and obtaining first-hand information (Creswell, 2013). As with the axiological assumptions the epistemological assumptions direct the selection of a qualitative research design.

3.3.3 Interpretivism Research Paradigm

Interpretive frameworks also have embedded philosophical assumptions (Creswell, 2013). Three common frameworks (Creswell, 2013) or worldviews (Creswell, 2009) were considered as part of the research design selection, namely, Positivism, Social Constructivism and Pragmatism.

3.3.3.1 Positivism

Positivism has a foundation built on a deterministic philosophy whereby causes determine effects and outcomes (Creswell, 2009). It is reductionist, logical, empirical and cause and effect oriented (Creswell, 2013). It is predominantly noticed within quantitative research wherein variables comprising hypotheses are measured objectively (Creswell, 2009) (Creswell, 2013). It has a strong affiliation to research, applying quantitative statistics in order to report on the results (Creswell, 2009). One of the assumptions associated with this framework is that “Research is the process of making claims..,” (Creswell, 2009), which then assumes that the research undertaken has to have made claims or propositions or hypotheses that would be tested, however, this is not the case as the research undertaken is based on applied research. The researcher aims to study the BPR project phenomenon to gain more understanding of the factors that influence its outcome. These factors would then lead into the development of concepts that will be applied towards creating a management framework aligned to the purpose of the research.

3.3.3.2 Pragmatism

Pragmatism arises from the worldview that actions, situations and consequences are more important than cause and effect conditions (Creswell, 2009). Neither is it committed to any one system of philosophy (Creswell, 2013). Pragmatists believe in freedom of choice and will therefore choose whatever approach works for the research at that point in time (Creswell, 2009). This is synonymous with mixed research design approaches whereby the researcher can draw from both

qualitative and quantitative assumptions (Creswell, 2009). This framework however has one key assumption that the researcher would like to explore. The first assumption is “freedom of choice,” to select methods, techniques and procedures that best meet their needs when conducting the research (Creswell, 2013). This assumption will be carried forward when defining the data analysis technique, as the researcher assumes that the data analysis will be conducted using unconventional yet proven methods. This is the only assumption that ties the research to the Pragmatism framework.

3.3.3.3 Social Constructivism

The last philosophical interpretive framework is founded on the need for individuals to understand the world in which they live and work (Creswell, 2013).Social Constructivism (often described as interpretivsm) (Creswell, 2009) (Creswell, 2013) is typically seen in qualitative research. The aim is to create meaning of a context or situation by relying as much as possible on participant views of the subject under study. This framework assumes that meanings are constructed by human beings as they engage with their world (Creswell, 2009). This assumption is related to the ontological view of how we understand the world. We could understand the world as being a real world existing independently of our knowledge or a world that is socially created (Poetschke, 2003). This ontological view links directly to the research as the researcher seeks to gain an understanding of the BPR project phenomenon within a certain context wherein the context and phenomenon are the objects of study while the participants interact within the context to generate the meaning hence “social constructivism” (Poetschke, 2003). This assumption of reliance on the participant’s views to define the interpreted meaning has led the researcher to a “problem of double hermeneutics” (Poetschke, 2003), as the research participants can interpret the meaning of the context and data while the researcher interprets the interpretation. To avoid this problem of double hermeneutics the researcher would have to rely on his interpretation of the context by making use of multiple data collection techniques in a textual format that is an output of the context and human interaction rather than an interpreted view as can be the case with surveys.

Taking into account the philosophical assumptions, a supportive conclusion can be drawn to support the selection of a Qualitative Research Design Methodology.

The next section will focus on the research inquiry.

3.4 Research Inquiry

Creswell, 2009, describes qualitative approaches as being constructivist and requiring observations of behaviour. He further states:

“In this situation the researcher seeks to establish the meaning of a phenomenon from the views of participants…….One of the key elements of collecting data in this way is to observe participants’ behaviours by engaging in their activities” (Creswell, 2009).

Selecting a qualitative research design meant that the research had to display in its structure and method some common characteristics described in Table 3.1 (Creswell, 2009) . Table 3.1 also describes the link between the characteristic and the research. These links will be used to unravel the conundrum of selecting a research strategy/inquiry.

Table 3.1: Qualitative Characteristics Linking to Research

Question	Qualitative Characteristics	Links to Research
What is the purpose of the research?	• To describe and explain • To explore and interpret • To build theory	The research aims to explore the BPR project phenomenon. Each unit of analysis will be described against the project influential factors, with the aim of interpreting their combined outcome. The research should ultimately use this interpretation to develop concepts and not build theory.
What is the nature of the research process?	• Holistic • Unknown variables • Flexible guidelines • Emergent methods • Context bound • Personal view	The research process will include observing BPR projects within a real life context. The axiological assumptions (personal views) will be part of the research. Emergent methods will be used as it is qualitative in nature.
What are the data like and how are they collected?	• Textual and or image-based data • Informative small sample • Loosely structured or non-standardised observations and interviews	The research will rely on observations of social interaction and documentation. No interviews are proposed as part of the research. Due to the nature of the research only a limited number of analysis units or cases would be observed over a predetermined time period.

Question	Qualitative Characteristics	Links to Research
How are data analysed to determine their meaning?	• Search for themes and categories • Acknowledgem that analysis is subjective and potentially biased • Inductive reasoning	Data will be analysed by firstly forming a description of events linked to the project influential factors. This will then lead to interpretation by consolidating all descriptions in search of concepts. Analysis of the data will bring into it some aspects of the researcher's interpretation of the events and will be subjective, however, a suitable technique will be employed to alleviate bias.
How are the findings communicated?	• Words • Narratives, individual quotes • Personal voice, literary style	The research is based on the project influential factors, which are textual and descriptive in nature. The findings will be conveyed by the researcher in a textual format as well.

From Table 3.1 a summary can be drawn as to the intent of the research and how it aims to achieve this. The research will explore the BPR project phenomenon in an empirical nature bound within a real life context and time period in order to understand influence of the project influential factors on a BPR project's outcome. These meanings or understandings will be consolidated in order to inform their interpretation that will ultimately lead to the development of new concepts.

The above research intent leads into the selection of the research strategy by mapping the above summary to literary descriptions made about research strategies. Before directly mapping the intent of the research presented in this thesis, let us first state what the research is not intending to do, thereby excluding alternate research strategies. The research is not intending to describe (Creswell, 2013) or understand (Leedy & Omrod, 2010) a particular experience from several participants as they have lived and or perceived it; hence a phenomenological study is not an appropriate research strategy.

Similarly, the research is not intending to derive a theory based on data collected about the human interactions and actions and how they influence one another; hence also excluding a grounded theory research strategy (Leedy & Omrod, 2010).

Leedy and Omrod, 2010, describe the purpose and focus of a case study research strategy as being research undertaken to understand a situation or situations in great depth within its natural settings bound by a specific period of time. The research intent matches the above description, as the "situation" can be a synonym for a "BPR project" and in the same way "natural settings" can be synonymous to "real life context".

To further support the use of the case study research strategy, a further description by Cresswell, 2013, suggests that a case study research explores a real life, contemporary bounded system (a case) or multiple bounded systems (cases) over time through the detailed analysis of in-depth data collected, which include observations and documentation, and reporting its description and or identified themes. As can be seen, the intent of the research propounds the use of the case study research strategy when correlated to the above description.

It should be noted that the case study form of inquiry is not without its “heightened scepticism toward cross-case econometrics” (Gerring, 2007). Two key problems would have to be addressed in order for the case study form of inquiry to remain credible for use by the researcher.

The first problem is that of interpreting cause and effect relationships (Gerring, 2007). This is a problem for the researcher, as one of the steps of the research is to conduct a cross case analysis (c/f Section 3.5.6) of the cases selected for study by interpreting the data ascribed to project influential factors as indicative of the importance or relevance to the outcome of the project itself.

The second problem is that of counterfactual arguments (Gerring, 2007), which either support the interpretation of the cause and effect relationships or refute its interpretation all together. This is also a problem for the researcher that links to the interpretation of data that will be carried out within the cross case analysis phase of the research.

The problems stated above could invalidate the research, however, they can be expelled by the use of alternate analysis techniques (Gerring, 2007) (Ragin, 2008) other than the standard approaches, namely, Pattern Matching, Explanation Building, Time-Series Analysis, Logic Models and Cross-Case Synthesis (Yin, 2009). This approach refers back to the Pragmatist philosophical assumption wherein the researcher is allowed to select his own methods and techniques (Creswell, 2013). Charles C Ragin developed the **Q**ualitative **C**omparative **A**nalysis (QCA) technique (Gerring, 2007) (Ragin, 2008) (c/f Section 3.5.6) as an alternative to determining causal relationships within a case study form of inquiry. This alternative method will be adopted to expel the problems raised above.

The following sections deal with the research method adopted by the researcher and will close the description of the Research Design Framework.

3.5 Research Method

Now that it has been established that the research design methodology should be qualitative and that the research inquiry should be a case study form of inquiry, one can now focus on the specifics of the research method. The research method relates to the tools and techniques to be used in conducting the research (Hughes, 2006) and will be outlined in this section.

Yin, 2009, suggest that the following five components of a research method design are important for case studies:

- a study’s question
- its propositions, if any
- its unit(s) of analysis
- the logic linking the data to the propositions; and
- the criteria for interpreting the findings.

Two components, namely, its propositions and the logic linking the data to the propositions, are contradictory to the research type undertaken. The research presented in this thesis is of an applied research nature and will rely on the purpose of the research to fill in for the propositions. This approach is supported by Yin, 2009 when he suggests that the "purpose of the research" performs a similar function to "proposition". The use of the purpose of a research is further supported by Cresswell, 2009, as he suggests the purpose being an important part of the research as it sets the objectives and the intent of the research. Taking into account Yin, 2009 and Cresswell, 2009, views on the purpose of the research, the above components were restated to reflect the explicit use of purpose statements rather than propositions. So, for the purposes of the research presented in this thesis, the following components will be required as part of the research method:

- Its purpose
- Its study question or questions
- its unit(s) of analysis
- the logic linking the data to the purpose; and
- the criteria used for analysing and interpreting the findings.

Yin, 2009, suggested a case study method (see Appendix P) which was adapted to fit the restated required components, and to relay the high level purpose of the research as described in Section 1.2. The adapted method used in conducting the research is represented in Figure 3.2.

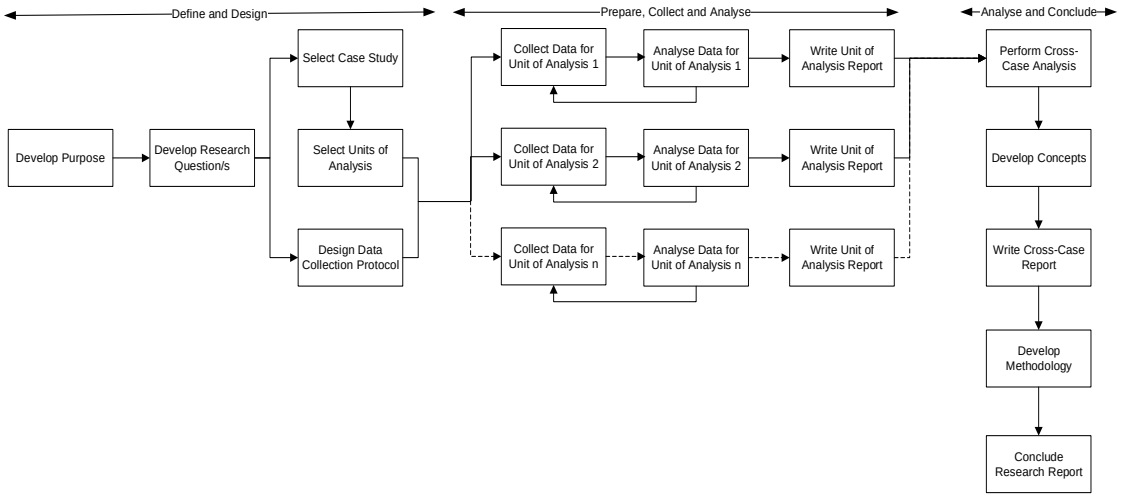


Figure 3.2: Case Study Method

Looking at the case study method represented by Figure 3.2, the following eight topics need to be described:

- Develop Research Purpose
- Develop Research Question/s
- Case Study and Unit of Analysis Selection
- Data Collection

- Data Analysis
- Cross Case Analysis
- Concept Development
- Methodology Development

One additional topic of “Research Validity” (Creswell, 2009) (Yin, 2009) (Creswell, 2013) will also be described as it is important in establishing the credibility and reliability of the research.

3.5.1 Develop Research Purpose

The purpose statement provides information about the central phenomenon being explored, the context in which the exploration will take place and the objectives or aims of the research (Creswell, 2009). The purpose statement or statements have to be explicit as it should direct the researcher towards the relevant research questions and the relevant data to be collected.

The purpose for the research presented in this thesis is to derive a fit-for-purpose management approach that could guide project leaders in executing their projects within their organisational environments. This will be achieved by empirically observing how prior researched factors influence the outcome of BPR projects, leading to stronger understanding of the “BPR project execution” phenomenon. This understanding by way of observation and analysis of relevant data will lead to certain interpretations being made that will eventually inform the development of the BPR execution methodology.

The researcher developed the Purpose Development Model (Figure 3.3) in order to visually illustrate the contents of a purpose and how such a purpose would then lead into the research questions. The next paragraph illustrates the use of this model by practically constructing a revised purpose as it relates to the research presented in this thesis.

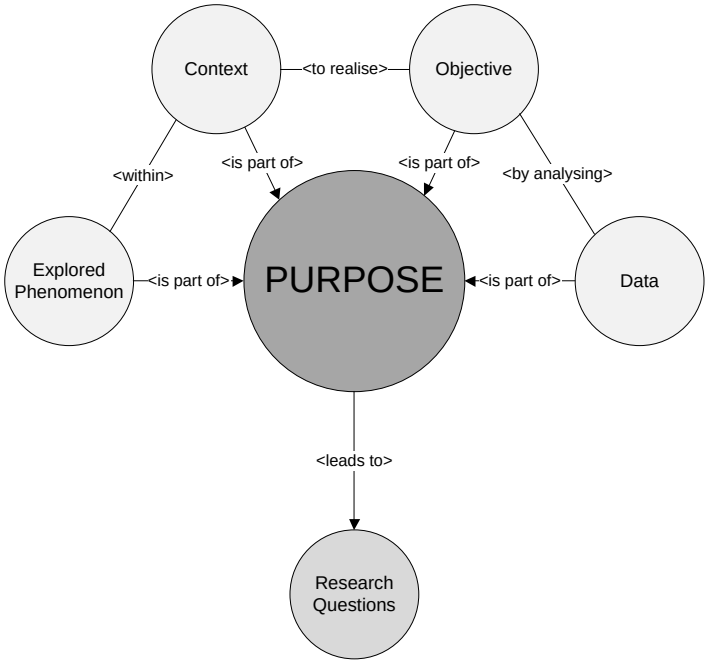


Figure 3.3: Purpose Development Model

The phenomenon explored as part of the research presented in this thesis is the “BPR Project Execution” phenomenon. This phenomenon is conducted within the context of a Financial Institution and focuses on observing executed “BPR

Projects" in order to realise the objective of deriving a fit-for-purpose "BPR Management Approach" by analysing collected data that are associated with the impact that "BPR Project Influential Factors" have on the executed BPR Project.

The Research question or questions that support the above purpose are covered next.

3.5.2 Develop Research Question/s

Yin, 2009, suggests that case studies are the preferred method when a "How?" or "What?" question is being posed. This is further supported by Creswell, 2009, who proposes a central question and associated sub-questions. Yin, 2009, also puts forward the need for supporting questions that would guide the researcher towards answering the central research question.

The central research question proposed for the research presented in this thesis should also aim to direct the rate of improvement for executing successful BPR type projects and should incorporate the identification of prevalent and non-prevalent success factors. The research question should not focus directly on identifying or supporting previously researched influential success factors or the Technical Process Improvement Methodologies, such as Six Sigma that has been developed for over thirty years (Process Quality Associates, 2006), other than to aid the research. Using the guidelines suggested by Creswell, 2009, the following central question was developed and is the research question for this study:

"How should a BPR project be executed within a financial service company to achieve an appropriate balance of the critical success factors?"

The next step is to derive the supporting questions by focusing on the purpose of the research. The following questions are supportive of the central question:

- Has prior research identified all relevant project influential factors? If not, what are the other relevant project influential factors?
- Which project influential factors are more relevant or important to the successful outcome of a BPR project?
- How can the prevalence of the applicable BPR project influential factors be determined?
- What is required in order to enable and prioritise highly relevant and important BPR project influential factors that lead to a successful outcome?
- How do the above integrate with current BPR project methodologies?

Using the research purpose and questions as guidance, the next step would be to select the case study and unit of analysis.

3.5.3 Case Study and Unit of Analysis Selection

Selecting an appropriate case study design (Yin, 2009) is determined largely by the empirical universe that the researcher is attempting to understand. (Gerring, 2007). The researcher therefore requires sufficient access to the potential data, research participants, documentation and the case study's contextual environment for detailed observations (Yin, 2009). The case study must also be selected based on its most likely ability to "illuminate" (Yin, 2009) the research question.

Before proceeding to the case study design and the selection of the case study and its units of analysis, it is prudent to point out certain definitions used as part of the research presented in this thesis in order to avoid confusion. "Case Study" within the context of the research is also used as a reference for the organisation

which is a financial institution under study, and which will be termed as the “Bank”. “Units of analysis” is also termed “Case/s” and is used as a reference for the objects under study within the Bank. The objects for the research presented in this thesis are classified as the “BPR projects”.

Coming back to the case study design Yin, 2009, describes four types of case study designs as represented by Figure 3.4. This model was used to inform the selected case study design and wasnused for conducting the research.

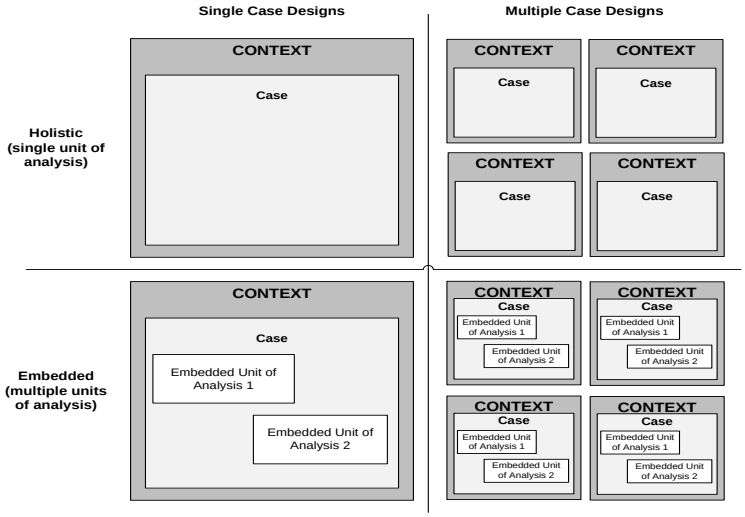


Figure 3.4: Basic Types of Case Study Designs (Source Yin, 2009)

An embedded single case design was selected for the following reasons:

- A pilot case study (Yin, 2009) was performed to ensure the suitability of the organisation selected as the case study for research (c/f Section 4.1)
- The researcher is employed by the selected financial institution thus providing easy access to the required data, research participants, documentation and case study environment where detailed observations and field work could be carried out.
- The financial institution was aggressively engaged in BPR thus affording the researcher the opportunity to select the minimum required units of analysis to allow for a “cross-unit or cross case comparability (unit homogeneity)” (Gerring, 2007). This is an important aspect, as units of analysis, also termed cases within the research presented in this thesis, have to be similar to one another in whatever respect, as they affect the potential interpretation of the causal relationships (Gerring, 2007). No knowledge can be gained within an “uncontrolled homogeneity” (Gerring, 2007) as the cases can differ in several aspects, thus changing their context leading to false causal processes.
- Permission to conduct the research within the institution was obtained.

Limitations on conducting a single case study predominantly fall in the category of non-generalisability (Creswell, 2009) (Yin, 2009). This means that the research is conducted within a particular context and the outcomes are ascribed to that context. Particularity is supported as a form of case study research outcome instead of generalisability (Creswell, 2009) (Hyett, et al., 2014).

Table 3.2 outlines the protocol used to select the BPR projects within the case study context. This approach of using a protocol to select the units of analysis aids in asserting construct validity (Yin, 2009).

Table 3.2: BPR Project Selection Protocol

Exploratory Questions per Project				
Step	**Category**	**Question**	**Positive Result Action**	**Negative Result Action**
1	Mandatory	Is a detailed project plan available?	Step 3	Step 2
2	Mandatory (if negative on step 1)	Is a detailed implementation proposal available?	Step 3	Project rejected
3	Mandatory	Is the BPR project focused on an organisational business unit, including strategy and lowest level process execution?	Step 4	Project rejected
4	Mandatory	Is there evidence of the use of a project execution methodology?	Step 5	Check if Step 5 is positive, if not reject project
5	Mandatory	Are Six Sigma and or Lean Engineering used as the process improvement methodology?	Project accepted. Check for supporting documentation .	Project Rejected
6	Supportive	Is a Project Charter available?	Mark as a sample Project Charter. Move to Step 7	Step 7
7	Supportive	Is a Business Case available?	Mark as a sample Business Case. Move to validation questions.	Not Required
Validation Questions for Artefacts Required				
Step	**Category**	**Question**	**Positive Result Action**	**Negative Result Action**
1	Mandatory	Have all artefacts per project been obtained?	Check for sample artefacts.	Obtain artefact from relevant resource.

Further to selecting the case study and unit of analysis, the Researcher opted to settle for a minimum of five BPR projects as any lower number would not aid in the cross referencing of data collected across the units of analysis. A typical question on this approach would be; why a minimum of five? As mentioned above, in order to remain true to the principle of unit homogeneity, units of analysis had to be very similar in all respects (Gerring, 2007). Gerring, 2007, also suggests that “case study researchers are often suspicious of large-sample research, which they suspect, contains heterogeneous cases whose differences cannot easily be

modelled". Furthermore, application of the QCA cross case analysis technique (c/f Section 3.5.6.1) is advised for a small set of N cases ranging from 5 to 50 (Marx, 2010) and a medium sized research design (5<=N<=50) is suggested as having the capability to contribute to theory development and or theory testing (Marx & Dusa, 2011) thus justifying the use of five BPR projects.

The next step in the process would be to identify what types of data would be collected and analysed.

3.5.4 Data Collection

Data for case study research can take many forms, including documented observations, documents, archived records and electronic media (Leedy & Omrod, 2010). The focus of the data collection should be directed towards achieving the intent of the research by aiding the answering of the research questions. Cresswell, 2009, suggests that collected data should provide descriptions of the case study setting where the case study will be conducted, the participants being observed, the events that will be observed and the processes performed in order to achieve these events. This description leads us to the understanding that data should be collected in order to provide the context of the organisation, the context of the BPR project teams, the context of the BPR project and the execution of the BPR project itself.

Data collection was centred on two themes, namely, data procedures (Creswell, 2009) (Yin, 2009) or strategies and the associated data collection protocol (Yin, 2009). Data procedures and strategies give rise to the "how", while the data protocol gives rise to the "what" (Yin, 2009). Table 3.3 provides a descriptive rendition of the data collection procedures employed and the associated protocol. Data were collected during the observation period between, that is, from October 2011 to July 2012 (c/f Chapter 4).

Table 3.3: Data Collection Types and Associated Protocols

Observation Data Collection Type	
Description	For the purposes of the proposed research, observation can be defined as; "the researcher taking field notes on the behaviour and activities" (Creswell, 2009) acted upon within each unit of analysis at the research site. The field notes will be taken in an unstructured or semi-structured way (using key objectives defined in the protocol) (Creswell, 2009).The above way of taking field notes provides the researcher with flexibility to adapt to situations that would otherwise have eluded the researcher. Two types of observation techniques will be employed for data collection. The first being whereby the researcher does not participate but rather only observes the unfolding of activities. This type of observation technique will be employed during all forms of meetings associated with the projects. The observations will be documented and saved on an email for further references in order to support or negate documented evidence. The second is whereby the researcher also participates while observing (Creswell, 2009). This technique will only be employed if the researcher is a participant in the project. Participation will be closed to the role for which the researcher was employed to perform within the organisation, in order to minimise any influences on research outcomes. These techniques will provide the researcher with first hand experiences, allow information to be recorded as it occurs, gain insight into problems by observing

	unusual aspects and the ability to explore topics that may be uncomfortable to discuss (Creswell, 2009).
Protocol	Field notes required: • Context of event or activity (Creswell, 2009) (Yin, 2009) (Leedy & Omrod, 2010) • Descriptive notes (reconstruction of event or activity) (Creswell, 2009) • Interpretive or reflective notes (speculations, problems, ideas, impressions and prejudices) (Creswell, 2009) • Majority of the field notes will be email based as this is a quick an easy medium to document and store unstructured observations. Email based, refers to the fact that all notes will be stored using an email, including any emails distributed across stakeholders related to the projects (see Appendix C) Objectives: • Seek insight into challenges experienced within the BPR project • Identify how these challenges were overcome • Gain understanding of what success factors were present and how relevant they were to the success of the BPR project • Identify which success factors were not prevalent and what impact they had on the BPR projects success • Identify what steps were taken to execute the BPR project • Understand how the BPR Methodology was employed and executed • Identify remedial steps taken to ensure project success (if any) when stumbling blocks were experienced
Documentation Data Collection Type	
Description	Documents in the context of the proposed research, will involve organisationally produced artefacts including project plans, project charters, business cases, meeting minutes, training documents, emails and reports. (Creswell, 2009)
Protocol	Each document should serve the purpose of gaining insight into the execution of the BPR project and ultimately aid in achieving the objectives defined in the protocol for the observation data collection type. Further to aiding the achievement of the aforementioned objectives, the following questions should yield positive answers before usage in research is accepted: • Is the document an approved project document? This aids in strengthening the credibility of the research. • Has permission been obtained for the use of the document in the research? This aids in ensuring that no unethical lines are crossed while conducting the research. • Is a copy of the document available for review? This aids in strengthening the construct validity of the research.

Data collected are used as sources of evidence (Yin, 2009) when it comes to qualitative research, and as such it is prudent to describe how the weaknesses of each data source will be overcome by the research.

Let us first look at the weaknesses of "documentation" as a data source and how it will be overcome:

- "Retrievability" (Yin, 2009) was overcome by subjecting multiple BPR projects to the case study selection protocol. If any mandatory document was not available, the BPR project was rejected. Furthermore, the researcher had access to the databases that housed the relevant information.
- "Biased Selectivity" (Yin, 2009) was similarly overcome by subjecting the considered BPR projects to the case study selection protocol.
- "Reporting Bias" (Yin, 2009) was overcome by the creation of a peer review panel that included observed participants. (see Appendix D for panel members).
- "Access" (Yin, 2009) was overcome based on the fact that the researcher was employed by the organisation and approval was provided by executive management to conduct the research, therefore the researcher had access to relevant information for the selected BPR projects.

The second source of data weaknesses was overcome in the following manner:

- "Time Consuming" (Yin, 2009) was not considered a weakness by the researcher, as the researcher dedicated 10 months of field work to aid with the observation of the BPR projects.
- "Selectivity" was overcome by subjecting the selected BPR projects to the case study selection protocol and by spending a long period in the field enabling the acquisition of the relevant observations.
- "Reflexivity" was overcome as the researcher was employed by the organisation and the observed research participants were well acquainted to the researcher. This being said however does not expel the possibility of double interpretation or double hermeneutics, where the researcher interprets information based on the research participants relayed interpretation of observed events. This problem of double hermeneutics remained a concern throughout the research; hence the researcher cautiously avoided participant interpretations.

Overcoming the weaknesses of the data sources is important in improving the reliability of the research and the credibility of the data analysed. This leads us to discuss the process of data analysis.

3.5.5 Data Analysis

Data analysis focuses on the analysis of the BPR projects by describing the context of each BPR Project, relaying a chronological view ("chronicle" if not used for interpreting causal relationships (Yin, 2009)) of the key events used for analysis and by creating adequate codes/categories (Creswell, 2009) that will be used for cross case analysis. Each unit of analysis will be analysed against the BPR project influential factors in terms of relevance and impact. In addition, each unit of analysis will be described based on documented evidence summarising key events and activities that occurred during the lifecycle of each project.

Cross case analysis is where the interpretation of causal relationships will take place by using the QCA technique (c/f Section 3.5.6). It does not form part of the single case/unit of analysis, which is the individual analysis of the selected BPR

Projects. Therefore, data analysis is more of a “description case” where data are organised and analysed to describe relations to a phenomenon (Yin, 2009).

The key output of the data analysis would be to create a ubiquitous set of data that is comparable across all five BPR projects aiding in the use of the QCA analysis technique. Therefore, the coding of the data informing the data analysis has to be based on highlighting the project influential factors. This relation then leads us to the selection of the BPR project influential factors to be used as the “codes” of data that will be analysed. The process involved in conducting the data analysis can be likened to “peeling back the layers of an onion” (Creswell, 2009) starting at the outer most layer working towards the inside, revealing the interpreted results. Figure 3.5 represents the descriptors of the process steps that need to occur in order for the data analysis to take place. The data analysis process steps are not meant to be linear and loops can occur between them.

The interpretative process and structure will be carried forward for discussion as part of the cross case analysis section that follows.

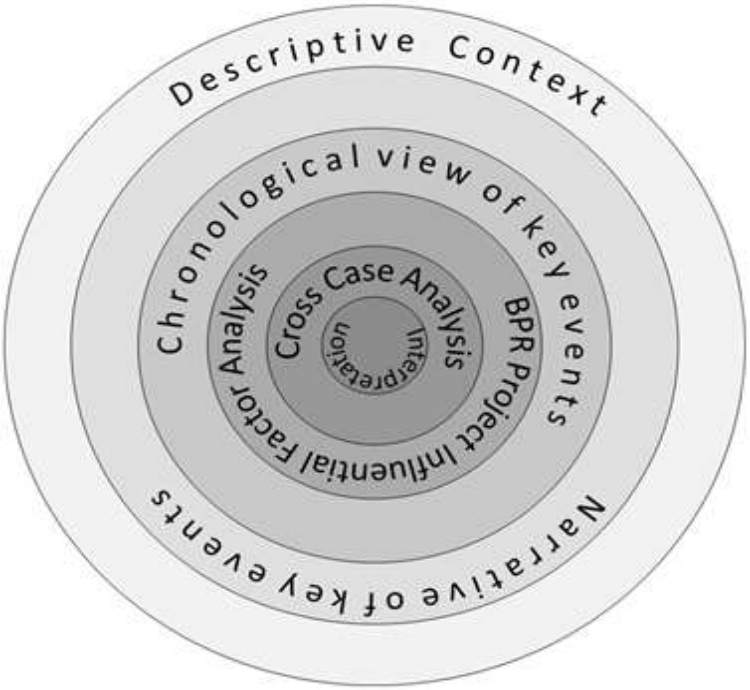


Figure 3.5: Data Analysis Layers

3.5.6 Cross Case Analysis

Cross case analysis leads in from the individual descriptive analysis of the BPR projects by focusing on the combined analysis of the project influential factors and their impact on the outcome of the project. It is similar to what Yin, 2009 describes as “Cross-Case Synthesis” as he mentions that the technique of cross-case synthesis aggregates findings across numerous studies. The difference here lies in the fact that the BPR Projects are the individual studies that are being aggregated. Aggregation, however, refers to statistics and statistics refers to a more dominant quantitative approach. This then leads to the dilemma of selecting an appropriate, robust and proven way of conducting a qualitative analysis of the aggregated findings. This can best be achieved by outlining what the research aims to interpret or propound as the research outcomes or objectives. So, let us first begin by defining the outcome of the cross case analysis.

The main outcome of the cross case analysis is to allow the researcher to scientifically determine the most relevant project influential factors, thereby facilitating interpretations of the impact of these factors on BPR projects. These interpretations in turn will lead to the derivation of concepts (c/f Section 3.5.7) that will be used to build a methodology (c/f Section 3.5.8) that facilitates the prioritisation of these factors in executing a BPR project.

Rihoux and Ragin, 2009, mention the technique Qualitative Comparative Analysis (QCA) and its five uses. QCA can be used to summarise data, check coherence of data, check hypotheses or existing theories, conduct a quick test for conjecture and facilitate the development of new theoretical arguments (Rihoux & Ragin, 2009). The QCA usage that most aligns itself to the cross case analysis outcome sought is that of the facilitation of the development of new theoretical arguments. Rihoux and Ragin, 2009, define this usage as a means of using a truth table free of contradictions with the aim of obtaining a reduced expression that may be interpreted to yield new theoretical arguments. Aligning the above statement with that of the cross case analysis outcome, the researcher derived the following statement:

"The truth table is used to aggregate the individual BPR Project analysis findings into a format that facilitates the use of QCA in order to determine the most relevant project influential factors by reducing the expression in a scientific manner facilitating the interpretation and development of new insights and concepts."

The above statement, which aligns the usage of QCA and the cross case analysis outcome now directs us to explore QCA as the cross case analysis technique that was selected. A brief overview of QCA is provided in the next section.

3.5.6.1 Qualitative Comparative Analysis (QCA) Overview

Ragin, in Schneider and Wagemann, 2007, initially proposed the use of QCA as an interpretive analysis technique for social science data. It is based on set theory and its associated mathematical principles such as set relations (Ragin, 2008). Many examples of set relationships are cited in various books, however, it would be prudent to elaborate the principle of set relations in the context of this specific research.

Take a simple example of a successful BPR project. If the researcher were to propound that there was a link between successful BPR projects and good project management, the researcher would be arguing the fact that successful BPR projects were a subset of BPR projects experiencing good project management. The fact that there exist successful BPR projects with mediocre project management experiences does not refute the researcher's claim in any way. It merely points to the fact that there are many paths that could lead to successful BPR projects. The above example should not be confused with correlational arguments as it is asymmetric in nature. Good project management might be sufficient for the creation of a successful BPR project, yet a successful BPR project does not necessarily have to constitute good project management. This asymmetric principle is one of three properties of set theory and inherently forms part of the properties of QCA as well (Schneider & Wagemann, 2007) (Ragin, 2008) (Rihoux & Ragin, 2009).

Equifinality is another property that was touched upon when it was mentioned that there might be many paths that lead to a successful BPR project. To explain equifinality, one needs to expand the notion of a successful BPR project to have more than one condition. The term condition is primarily used within QCA as something that has to be present or absent in order to realise a certain outcome (Schneider & Wagemann, 2007) (Ragin, 2008) (Rihoux & Ragin, 2009). For the

purposes of the research presented in this thesis the outcome in question is a successful BPR project as defined in Chapter 3 and the interim conditions can be considered to be the project influential factors described in Table 2.1 (b/f Section 2.2). The conditions are termed interim, as they will be enhanced when conducting the cross-case analysis (c/f Section 4.9.1). Referring back on the property of equifinality, one could add an additional condition for successful BPR projects, namely, strong executive sponsorship. Hypothetically, if empirical evidence suggested that executive sponsorship was necessary for the realisation of a successful BPR project, one would then end up with two paths to a successful BPR project outcome. This can be presented in the selected notational format (Schneider & Wagemann, 2007) as illustrated below: ("PM" denotes good project management, "ES" denotes strong executive sponsorship and "O" denotes the outcome which is a successful BPR project)

$$PM * ES \rightarrow O$$
$$\sim PM * ES \rightarrow O$$

The statements read as: A successful BPR project is the outcome (denoted by the symbol "→", also indicating sufficiency (c/f Section 3.5.6.2)) when the project experiences good project management AND (denoted by the symbol "*") strong executive sponsorship OR (denoted by symbol "+"), alternatively when the project does not experience good project management (denoted by the negation symbol "~") but experiences strong executive sponsorship. The statement can also be represented by:

$$PM * ES + \sim PM * ES \rightarrow O$$

The third property namely; Conjunctural Causation (Schneider & Wagemann, 2007) (Ragin, 2008) (Rihoux & Ragin, 2009), refers to the phenomenon of having multiple conditions in combination in order to realise a certain outcome (Schneider & Wagemann, 2007) (Ragin, 2008) (Rihoux & Ragin, 2009). In other words, no single condition is responsible for producing the outcome. Using our example of equifinality and expanding it to include one more necessary condition required for realising the outcome of a successful BPR project which is the condition of strong project team cohesion (denoted by "TC"), one could end up in a case where a successful BPR project is deemed to be caused by the presence of good project management, strong executive sponsorship and strong project team cohesion as denoted by the solution term or solution path below:

$$PM * ES * TC \rightarrow O$$

The above properties are key to the research presented in this thesis as prior research has propounded many project influential factors and if the researcher were to aim at prioritising these factors in terms of relevance or higher relevance the researcher would need to define the relevance of these conditions for the outcome and also determine what solution paths lead to the desired outcome.

In addition, one of the niches of QCA is its use for small to medium sized "N" case study type research (Schneider & Wagemann, 2007) (Ragin, 2008) (Rihoux & Ragin, 2009) (Marx, 2010) . The minimum number of cases selected within the research presented in this thesis aligns itself with the small N type of case study research approach. Charles C Ragin, 2008, also inferred that QCA was developed to support the social science research community by filling what he saw as a gap in the data analysis of case study type research, in particular where the number of case studies ranged from 2 to 100 and a comparative analysis was required in order to assert an inference of causation. This inherent asserted capability of QCA just described is what will be used when conducting the cross case analysis, bearing in mind the outcome of the cross case analysis is to derive insights into

new concepts derived by analysing the aggregated project influential factor findings.

At this juncture it is prudent to note that QCA as a case study research analysis technique comes in various forms or nuances. The first one is Crisp Set QCA or csQCA as initially developed by Ragin as mentioned in Schneider and Wagemann, 2007. The csQCA nuance required dichotomised data which meant that conditions were either full members of a set or full non-members of a set (Schneider & Wagemann, 2007) (Ragin, 2008) (Rihoux & Ragin, 2009). This meant that when truth tables were created for analysis facilitation, conditions were either represented by a 1 or a 0 indicating the condition's presence or absence in a set.

The dichotomisation of data was a key debate amongst social science researchers, both qualitative and quantitative proponents alike (Schneider & Wagemann, 2007) (Rihoux & Ragin, 2009).The main critique against the use of dichotomised data and inherently csQCA was that dichotomisation leads to loss of information if analysis were to be conducted at a micro level or if degrees of set membership were defined as data input or output (Schneider & Wagemann, 2007).

The above critique led to the development of Fuzzy Set QCA or fsQCA also developed by Ragin as an enhancement to QCA to cater for degrees of set membership (Schneider & Wagemann, 2007) (Ragin, 2008) (Rihoux & Ragin, 2009). This format or nuance of QCA is of particular interest for the research, as it allows the numerous number of project influential factors to be categorised in order to reduce the number of conditions that are required for a truth table form of analysis. The truth table form of analysis is still required as even fsQCA is represented by a truth table based on having a cross over score of 0.5 in terms of defining set membership for analysis (Ragin, 2008) (Rihoux & Ragin, 2009). This however does not mean that the degrees of membership are lost as the raw values are calibrated in order to inform the calculation for consistency and coverage values (c/f Section 3.5.6.2).

As mentioned previously the best way to describe the detail of the specific QCA nuance selected is by detailing its approach to the research which follows next. (Ragin's fsQCA manual can be referenced under Appendix F for a detailed generic view of the fsQCA technique and the fsQCA tool)

3.5.6.2 QCA Application Model

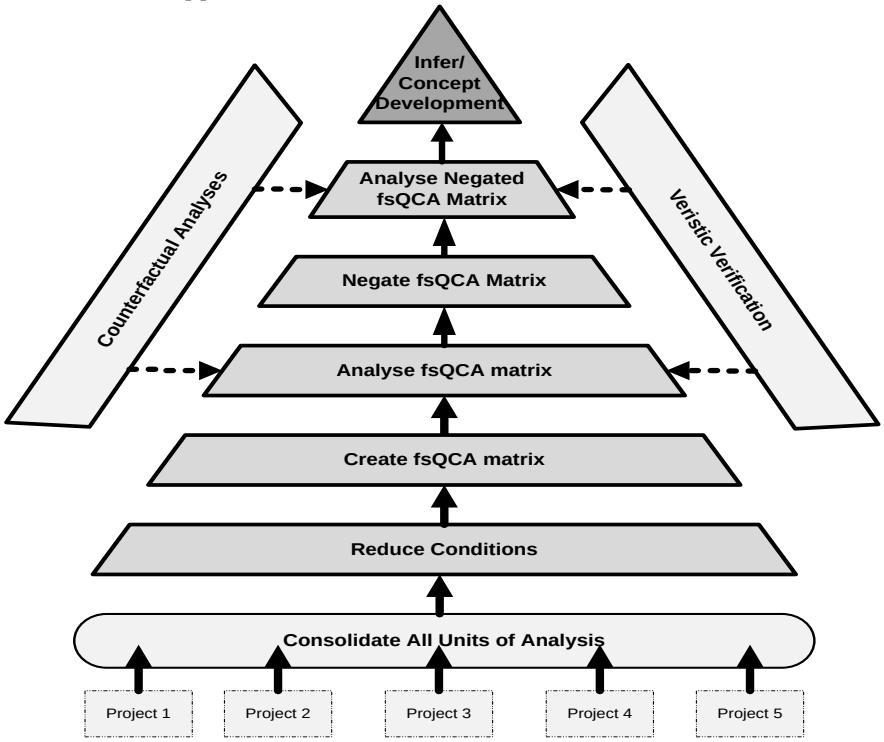


Figure 3.6: QCA Application Model for Cross Case Analysis

The QCA Application Model (Figure 3.6) for Cross-Case Analysis was developed by the researcher in order to guide the use of fsQCA within the research presented in this thesis. Each component of the model will be briefly overviewed in the context of the fsQCA technique and its usage within the research presented in this thesis. It will start off by looking at the structural configuration of the conditions used for analysis, leading into the analysis approach of the derived fsQCA truth tables. The "Infer/Concept Development" component approach will be carried forward for an overview to Section 3.5.7.

The **"Consolidate All Units of Analysis"** component is self-descriptive and does not need much explanation. All the individual analyses of the revised project influential factors would first need to be aggregated in the form of a matrix. The format for consolidation should contain the following items:

- The revised project influential factor
- The presence of the factor within individual cases

The second component **"Reduce Conditions"** is based on the avoidance of "limited diversity" as the number of possible combinations increases exponentially as the number of conditions increases (Rihoux & Ragin, 2009) (Schneider & Wagemann, 2007). The reduction of initial conditions can be approached by using the technique of aggregating the initial conditions (Rihoux & Ragin, 2009) into a category. The category would then become the new condition.

By using a six-value scheme to represent data with FsQCA, one is able to represent a finer grained fuzzy set without losing the essence of the data one is trying to represent (Ragin, 2008). Figure 3.7 represents the selected way of representing data, namely, six-value fsQCA, after aggregation of initial project influential factors versus the alternate csQCA method.

Selected Method		Alternate Method	
fsQCA Set Value Description	fsQCA Value	csQCA Set Value Description	csQCA Value
Full Set Membership	1	Full Set Membership	1
Set Membership Mostly In	0.8	Full Set Membership	1
Set Membership More or Less In	0.6	Full Set Membership	1
Set Membership More or Less Out	0.4	Full Set Non-Membership	0
Set Membership Mostly Out	0.2	Full Set Non-Membership	0
Full Set Non-Membership	0	Full Set Non-Membership	0

Figure 3.7: FsQCA versus csQCA Data Representation (Source Ragin, 2008)

The selected fsQCA method of data representation describes the **"Create fsQCA Matrix"** component. The matrix will represent the following items:

- The conditions (aggregated format of the initial project influential factors)
- The scores of the conditions
- The outcome of the case, namely successful or not represented by a "1" or a '0" respectively

The fsQCA tool selected (Ragin & Davey, 2009) uses these data to compute all the relevant analysis required. This then leads us to the description of what we aim to analyse and how we aim to analyse it, namely, the **"Analyse fsQCA Matrix"** component of the model.

QCA and inherently fsQCA centres on the analysis of "necessary" and/or "sufficient" conditions by calculating scores for "consistency" and "coverage" (Schneider & Wagemann, 2007) (Ragin, 2008) (Rihoux & Ragin, 2009). There are three levels of analysis that can be derived from looking at the most complex solution term, the most parsimonious (minimal) solution term and the intermediate solution term (Schneider & Wagemann, 2007) (Ragin, 2008). All the above concept descriptions will ensue based on the context of its application to the research.

Let us first begin by describing what is meant by the concepts "necessary" and "sufficient". A Necessary condition is a condition that infers the presence of the outcome by its presence, or alternatively, where empirical evidence points to the fact that the outcome cannot exist without the condition being present (Schneider & Wagemann, 2007).

A necessary condition could then be termed as a critical condition and would require the highest priority. This argument could lead to a major debate centred on the inferences of the research, as only five cases are analysed. A much higher number of cases would need to be considered before strong empirical evidence can be produced for claiming any condition necessary for the outcome of a successful BPR project. This led to the researcher deliberately excluding this form of analysis going forward.

Sufficient conditions, however, do not suggest an absence of an outcome if the condition is absent, but rather suggest that if the condition is present there exists empirical evidence to suggest that the outcome will also be present (Schneider & Wagemann, 2007) (Rihoux & Ragin, 2009). If one infers a condition is sufficient for the outcome one is not placing any inference on the absence of the condition nor the absence of the outcome nor is one inferring or hypothesising that the absence of the condition will lead to the absence of the outcome. The inference will only be falsified if no sufficient conditions exist in the absence of the outcome.

Consistency, likened to significance, is a measure that evaluates the merit of a set relation being inferred or argued for (Ragin, 2008), however, a perfect consistency is not a measure that social scientists aim for, or consider a successful measure of a set relation. (Ragin, 2008). For example, a condition may exist in 8 out of 10 cases, which may be substantial enough to indicate that some sort of connection exists between the condition and the outcome (Ragin & Davey, 2009). Caution is also placed on the actual consistency value that one could attribute to a claim that a condition is sufficient for an outcome. Research has suggested that consistency values of 0.75 and greater are much easier to argue for than consistency values below 0.75 (Schneider & Wagemann, 2007) (Ragin, 2008) therefore a researcher can claim that a condition (or combination of conditions) is "almost always" sufficient for the outcome (Ragin, 2008) if a threshold value is maintained at 0.75 and higher. Note that the fsQCA tool (Ragin & Davey, 2009) is used to calculate consistency scores.

Once a condition has been identified as a sufficient condition for an outcome, one needs to determine the "empirical importance", "relevance" and "strength" (Schneider & Wagemann, 2007) (Ragin, 2008) of a sufficient condition. Coverage scores are used as a measure of empirical importance and can sometimes contradict consistency as you can have a high consistency value indicating a sufficient condition of interest while the same condition will have a low coverage score indicating its low relevance or strength (Ragin, 2008). Coverage measures the proportion of cases a specific condition covers. Thus if one has a condition with a lower coverage score indicating a small proportion of cases and a condition with a high coverage score indicating a high proportion of cases one can argue that the condition with the higher coverage score is of a higher empirical importance than the condition with the lower coverage score (Ragin, 2008). This principle of set theoretic arguments is of critical importance to the research as it will be used to create a mapping of priority for the BPR project influential factors under study.

"Counterfactual Analysis" is an analysis technique developed by Ragin, 2008 to cater for the gap of limited diversity when it comes to case study research analysis (Schneider & Wagemann, 2007) (Ragin, 2008). It is suggested that social phenomenon is limited in its occurrence within a natural context (Ragin, 2008), thereby complicating their analysis. Analysis would be easier if empirical evidence for relevant logical causal conditions existed and if one could focus on single causal conditions (Ragin, 2008), however, the social phenomenon does not work in accordance of perfect experimentation. This therefore creates "Logical Remainders" when one maps empirical evidence to the truth tables created to support fsQCA analysis (Schneider & Wagemann, 2007) (Ragin, 2008), in other words not all rows of the truth table would be represented by the cases under study.

Counterfactual analysis is an analysis outcome based on "imagining" the existence of empirically relevant cases, counterfactual cases, and using them to inform the outcome of a solution term (Ragin, 2008). This becomes important when the aim of the analysis is to focus on the most parsimonious or simplest solution term (Schneider & Wagemann, 2007), however, arguments exist against searching for a parsimonious solution term (Schneider & Wagemann, 2007). The argument revolves around the use of logical remainders in order to inform the analysis of a parsimonious solution term as it inherently produces limited information which could be relevant to the research outcome (Schneider & Wagemann, 2007).It is recommended that the aim should be towards searching for an intermediate solution term which would contain relevant information that is neither complex nor parsimonious but highly relevant to the research (Schneider & Wagemann, 2007). Searching for an intermediate term would involve the use of logically relevant counterfactual cases that are based on substantive knowledge (what we know

about the world), for example, if we wanted to explain which conditions contribute to good driving and we had six conditions of which two were gender and pregnant state, we would not use any logical remainders that represent a configuration containing a man that is pregnant (Schneider & Wagemann, 2007). Ragin, 2008, suggests the use of Easy Counterfactuals (reduction of complex solution term by one condition) over Difficult Counterfactuals (reduction of complex solution terms by two or more conditions), which also supports the aim of searching for an intermediate solution term based on inclusion of relevant logical remainders.

Counterfactual analysis should therefore lead us to a solution term that has the highest coverage and consistency score indicating sufficiency. This will be used to determine the priority of the causal conditions or conjunctural causal conditions by comparing scores of solution terms between the most complex solution term and the resultant term after counterfactual analysis has been applied, thus facilitating the achievement of the objectives for the cross case analysis.

The output of the sufficiency analysis based on assessing subset relations using consistency and coverage scores as well as applying simplifying assumptions in the context of counterfactual analysis has to be assessed to verify the output. This brings us to the **"Veristic Verification"** component of the model. Ragin, 2000, suggest that sufficiency can be assessed using the Probabilistic or Veristic assessment technique. He also goes on to suggest that the Veristic assessment technique is most likely the only one available for social research where the numbers of cases are quite small. Unlike the Probabilistic approach where disconfirming cases are allowed, the Veristic approach does not allow disconfirming cases, or cases where the causal condition or conjunctural causal conditions are present in both the absence and presence of the outcome (Ragin, 2000). The Veristic approach also facilitates the researcher in determining levels of sufficiency by the application and non-application of a threshold (Ragin, 2000).

A perfect sufficient causal condition can be inferred if the causal condition exists in all the empirical cases presenting the outcome, which means that the Veristic threshold has to be set at the maximum number of cases presenting the outcome (Ragin, 2000). A mostly sufficient causal condition can be inferred if the threshold is set at a benchmark representing a cross over point of 0.5 or half the number of cases presenting the outcome (Ragin, 2000). A disconfirming causal condition is not allowed if the causal condition is present in both case scenarios where the outcome is present or absent (Ragin, 2000). The above sufficiency assessment criteria will be applied to the outcome of the sufficiency analysis to further support the priority of the causal conditions inferred by the initial sufficiency analysis.

Returning back to the principle of asymmetry we know that any inferences made on the analysis of the BPR project influential factors on the outcome of a successful BPR project do not imply any inferences on the BPR project influential factors on unsuccessful BPR projects. This then leads us to the final step of the model namely, **"Analyse the negated fsQCA Matrix"**. The focus of this analysis is to further strengthen the inferences made. This will be done by firstly searching for "logically fallible inferences or subset relationships" (Schneider & Wagemann, 2007) by analysing the condition's causal relationships on the failed outcome or negated outcome, namely, the failed projects. Secondly, by analysing the fully negated matrix in order to substantiate the claims made on the positive influence of the presence of the conditions by confirming if the reverse is true if the conditions were to be absent.

Logically fallible refers to the concept where a causal condition is both a subset of the presence and absence of an outcome, which according to Schneider and Wagemann, 2007 is an untenable claim. For example, an inference that a BPR project, constituting that a strong cohesive team will most likely be successful is

proven fallible if empirical evidence suggests that BPR projects with strong cohesive teams would most likely fail as well.

It should be noted that when one uses the term “negated”, one means performing an analysis of cases that have the absence of the outcome (**“Negate fsQCA Matrix”),** which in the context of the research are cases that have been observed and classified as failed BPR projects. The negation of a fuzzy score is calculated by subtracting the original score from the value “1”. For example, good project management with a fuzzy score of 0.6 becomes 0.4 (mathematical negation of fuzzy scores (Ragin, 2008) (Ragin & Davey, 2009)). The analysis is no different than the analysis of the original fsQCA matrix in terms of consistency, coverage, counterfactual analysis and Veristic verification, however, the outcome would be used to rule out any contradictory or untenable claims and validate that the absence of the conditions hold true for the reverse of the outcome thereby strengthening any inferences or claims made while analysing the original fsQCA Matrix.

Any claims made on causal conditions will be used as part of the **“Infer/Concept Development”** component of the model which is described in the next section.

3.5.7 Concept Development

In the discussion of the outcome of the cross case analysis, it was stated that the main outcome of the cross case analysis was to allow the researcher to scientifically determine the most relevant project influential factors. This will aid in facilitating interpretations made on the impact of these factors on BPR projects and will further aid in supporting inferences or claims towards the development of concepts. (Note that by inference one is inferring causal relationships rather than cause and effect correlations.)

Let us first begin by defining and understanding what is meant by concepts in the context of the research.

The philosophical definition of a concept is an “idea” (Collins English Dictionary, 2003) (Oxford Dictionary, 2013) or a “theoretical construct within some theory” (Collins English Dictionary, 2003) which ties back to case study research, as case study research is exemplified if discovery (ideas) and theory development (theoretical constructs) are revealed (Yin, 2009). Also Inherent in fsQCA is set theoretic reasoning which gives rise to one of its uses which is concept formation (Schneider & Wagemann, 2007) (Ragin, 2008) where concept is defined as “the simultaneous presence of several phenomena” (Schneider & Wagemann, 2007). For example, the concept of a successful BPR project being defined in terms of the presence of good project management, or by way of set theoretic logic, the condition good project management is a subset of the outcome of successful BPR projects or good project management is sufficient for a successful BPR project.

Now that one has defined what is meant by concepts and how the research method supports such derivation, a further elaboration on the outcome of the concept development section follows.

Using the example of good project management being sufficient for successful BPR projects, we will step through the researcher’s thinking of concept development.

Firstly, concept development has to verify that whatever is claimed or inferred contributes to adding knowledge to the domain of BPR project execution; therefore, the hypothetical claim centred on good project management will only hold true as a new concept if prior research and literature do not contain the

elements thereof. Secondly any concepts proven as new concepts will be investigated and described in further detail. The concepts that are formed will then play a key role in deriving a methodology that focuses on the prioritisation of the BPR project influential factors, which would facilitate the undertaking of BPR projects within a financial institution.

3.5.8 Methodology Development

The research presented in this thesis has an output in mind and that output in question is centred on recommending an approach that will facilitate the execution of successful BPR projects by understanding how to balance and prioritise the high impact BPR project influential factors within the execution environment as a step before embarking on the technical BPR project work. Technical, as mentioned previously, means the actual BPR techniques such as Six Sigma.

Now as with all other uses of terminology, a definition of "methodology" in the context of the research presented in this thesis follows after which we delve further into the research approach adopted for methodology development.

Various literatures have conflicting definitions of "methodology" (Carter & Little, 2007), so in acknowledging that view, a purposeful definition of methodology is defined in the context of the research presented in this thesis in order to differentiate "method" from "methodology". Let us define method and methodology. Method is defined as being a prescribed approach that requires the compulsory execution of all steps in a sequential manner by using prescribed materials in order to achieve a stated result. This should be noted as this is not the aim of the research.

"Methodology" is defined as a domain specific ("scope of a particular discipline" (Business Dictionary, n.d.)) approach that provides guidelines based on certain "principles" (Business Dictionary, n.d.) that are contained in the execution phases in order to improve the achievement of a desired outcome. This definition as mentioned earlier is in the context of the research; however, this definition, in particular the "principles" aspect aligns to alternate suggested definitions of methodology, such as, "methodology is a branch of knowledge that deals with the general principles," (McGregor & Murnane, 2010).

Figure 3.8 depicts the model that was used in order to develop the methodology. Firstly, the concepts that developed as an outcome of the case study were used as the major input principles. Secondly, a literature review was undertaken to gain an understanding of project management and BPR project methods with the aim of using this knowledge to solidify the research as new knowledge by highlighting the gaps ascribed to the concepts developed as part of the case study.

There was also a need to study a framework that would facilitate the holistic nature of understanding BPR project execution environments. This need led to the study of Systems Theory (c/f Chapter 5). The output of the methodology as highlighted in its definition is to produce a set of guidelines and principles centred on the BPR project influential factors in order to facilitate an improvement in the success rate of executing BPR projects.

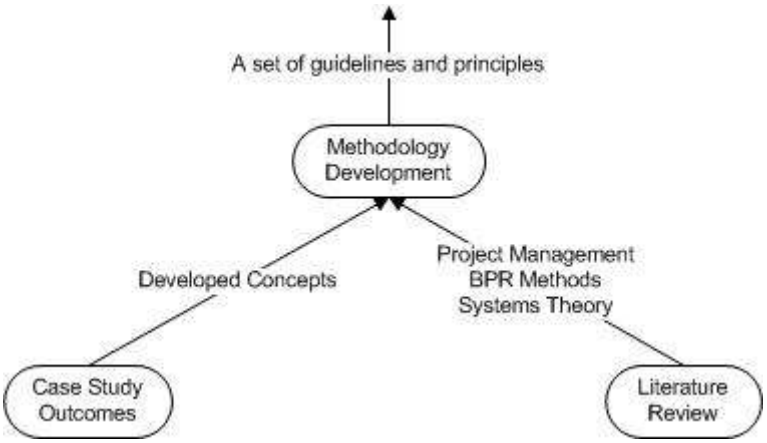


Figure 3.8: Methodology Development Model

Importance should also be placed on the credibility of the research, as such, the next section focuses on considerations that would facilitate research credibility.

3.6 Research Validity and Reliability

There are certain criteria that can be used to judge the quality of research designs (Yin, 2009) and the quality of the qualitative research (Leedy & Omrod, 2010) conducted. These criteria are vital in asserting the credence of the research. Yin, 2009, suggests that the research has to ensure that it passes certain tests, including tests of "trustworthiness, credibility, confirmability and data dependability". Creswell, 2009, suggests that a credible qualitative research should hold validity and reliability, however, cautions on the use of generalisability. In order to ensure that the researcher is aware of what is expected of a quality case study Yin, 2009, provides the following descriptions of the criteria that need consideration:

- Construct validity: identify correct operational measures for the concepts being studied.
- Internal validity: seeks to establish causal relationships (not used for exploratory cases studies, however, it is a consideration when the research is interpreting causal relationships).
- External validity: defining the domain to which a study's findings can be generalised.
- Reliability: demonstrating that the operations of a study, can be repeated, with the same results.

One also has to be cognisant of the research being conducted in order to ensure that the correct trade-offs are made when considering research validity (Gerring, 2007). Each criterion will be discussed in the ensuing sections.

3.6.1 Construct Validity

Ensuring construct validity is considered a challenge within case study research as researchers have often been pointed out as failing to develop adequate operational measures (Yin, 2009). There are few suggested approaches that a researcher can employ to ensure that adequate operational measures are undertaken so as to assert construct validity for the research. The researcher considered the following as part of construct validity:

- Multiple sources of information were used including observations and various supporting documents (project plans, business cases and training documents)

(Yin, 2009). This equates to the principle of using multiple sources of evidence (Yin, 2009) or the triangulation of data sources (Creswell, 2009). If interpretation is informed by multiple sources of data the research can claim that this aided in the validity of the research (Creswell, 2009). The researcher will validate observations by comparing his own interpretation of events with that of published project documentation and participant interactions during the course of a presentation.

- All data and information will be available as evidence for review (Yin, 2009). The researcher will make use of electronic storage other than the organisation's databases, thereby ensuring that all relevant data are available on request to ensure that there is evidentiary proof of research and collection of data. This leads to ethical considerations regarding the protection of the organisation under study. This ethical consideration was put forward to the organisation and approval was given to host the relevant study information. (see Appendix E)
- Peer debriefing (Creswell, 2009) and reviews (Yin, 2009) will be employed to further validate interpretations made within the study. The researcher formed a panel of reviewers consisting of the following members:
    - Two Black Belt Six Sigma Process Engineers who worked on the selected projects were asked to review all case study work to ensure interpretations were valid, if not, these will be stated as part of the research findings.
    - A Project Manager who worked on the selected projects was asked to review all case study work to ensure interpretations were valid, if not these will be stated as part of the research findings.
    - Two external reviewers outside of the context of the research were enlisted to ensure that the research holds credence within the domain of BPR Execution.
- In addition to peer reviews, an external auditor, who was selected to review the entire project, provided an objective assessment of research conducted (Creswell, 2009).

Having established operational measures that would aid in asserting construct validity, the next step was to establish internal validity of the research.

3.6.2 Internal Validity

There are common techniques suggested by Yin, 2009 that would address internal validity, namely, pattern matching, explanation building, using logic models and addressing rival explanations. These techniques, however, were not considered as they were not suited to the research. Leading in from the fact that the researcher philosophically selected to be pragmatic from the onset of the research, the researcher selected a technique that would be best suited to the research objectives. This technique, namely, the use of the QCA cross case analysis that is described in Section 3.5.6, helped to address the need for internal validity.

This brings us to the next consideration of external validity.

3.6.3 External Validity

External Validity deals with the topic of generalisability and the "problem of knowing whether a study's findings are generalisable beyond the immediate case study" (Yin, 2009).This problem, however, is not a shared concern among qualitative case study research practitioners as pointed out by John W Creswell when he notes, "In fact, the value of qualitative research lies in the particular description and themes developed in context of a specific site. Particularity rather than generalisability is the hallmark of qualitative research" (Creswell, 2009). This

is an interesting twist on the views of external validity and directs the attention to the trade-offs mentioned earlier.

The researcher does not assert generalisability beyond certain boundaries. These boundaries are depicted by location, the organisation's industry and the organisations structure. The study is conducted within a South African financial institution that propounds the use of a matrix type management structure. This context does restrict generalisability. This being said, even though the researcher does employ prior research on BPR project influential factors conducted in various other locations and industry domains, he would still not assert generalisability of the research.

As mentioned, the aim of case studies is not necessarily asserting generalisability but rather "particularity" (Creswell, 2009) (Hyett, et al., 2014). The outcomes of the case study can further be tested for general application against other contexts as required by further research needs, however, this is not within the scope of the research presented in this thesis.

Before moving on to reliability it must be noted that the researcher did not ignore external validity outright, and proposed the purpose statement as a measure of research success (Yin, 2009).

3.6.4 Reliability

Reliability is a measure of the researcher's approach to ensure minimal errors and the reduction of bias (Yin, 2009) by using consistent approaches as were used by other researchers (Creswell, 2009). The researcher considered the following instances as part of reliability:

- All data will be stored and made available when required (Yin, 2009) (b/f Section 3.5.4)
- Case study selection and data collection phases were conducted by the use of protocols (Creswell, 2009) (Yin, 2009). The researcher made use of operational procedures such as protocols to aid in procedural replication, thereby allowing the processes for case study and data collection to be easily followed by other researchers (Yin, 2009).
- A long period of time was spent on site to gain an in-depth understanding of the phenomenon being researched (Creswell, 2009). The researcher spent close to 10 months on site conducting field work for the research. This field work consisted of interacting with the research participants as they executed the BPR projects, observing events as they unfolded and collecting various types of documents and electronic messages such as emails as evidentiary proof.
- Negative or discrepant information was stated within the research outcomes, to enhance credibility of interpreted accounts (Creswell, 2009). As mentioned, the research findings were reviewed by three members of the research participant audience. Any negative or contrary feedback provided was stated as such when the findings were reported. The researcher also made use of the "Counterfactual" technique (b/f Section 3.5.6).

Having considered the relevant criteria and nature of the research only one criterion, in the researcher's view, was not fully met. As mentioned trade-offs would be required based on the conducted research and the external validity criteria were unfortunately not holistically considered. This now leads us to the detailed case study analysis.

4 Case Study Field Work and Analysis

The researcher deliberately selected to do a pilot case study before embarking on the actual case study analysis work. The pilot was used to gauge the suitability of the organisation, also termed the Bank, which was used in conducting the research. The preliminary findings were followed by a detailed case study analysis of the BPR projects that had been executed. The detailed case study consisted of a period of 10 months' field work, which included the two months spent on the pilot. Seven BPR type projects were observed over the period October 2011 to July 2012. Five BPR projects were selected for detailed analysis based on the application of the case study protocol, field work tenure and the availability of usable information.

4.1 Pilot Study

The preliminary work carried out within the Bank was used to determine the context and suitability. The Bank was eventually selected for the case study. The context focused on three perspectives, namely, BPR Project Execution Methodology, BPR Process Improvement Methodology and Success Factors. These perspectives are depicted in Figure 4.1 for which the outcomes are explained next.

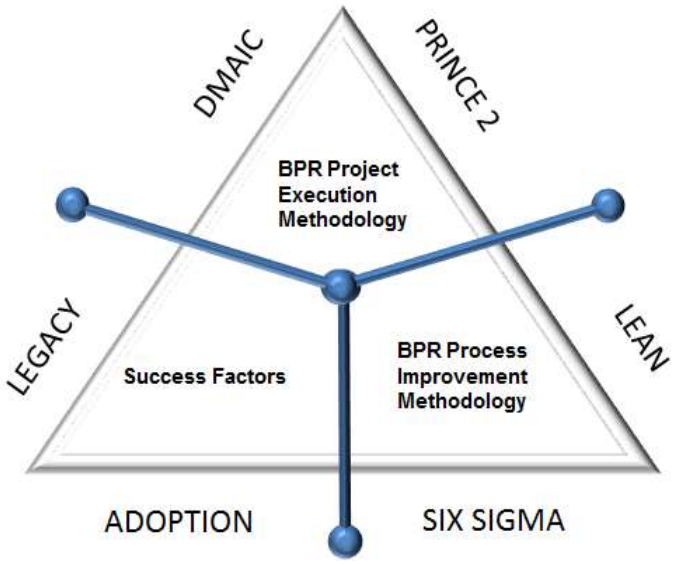


Figure 4.1: Practice Perspectives

From a BPR Project Execution Methodology perspective evidence pointed to the use of the DMAIC and PRINCE 2 project execution methodologies. DMAIC is a Six Sigma derivative, standing for the phases under execution, namely, Define, Measure, Analyse, Improve and Control. PRINCE 2 is a generic project management methodology, of which the phases include Start Up, Initiation, Execution and Close Out. Evidence also advanced the use of a hybrid methodology where the DMAIC forms part of the Execution phase of the PRINCE 2 methodology (b/f Section 2.4.2).

Based on the BPR Process Improvement Methodology findings, Lean and Six Sigma were mentioned previously as being the focus and scope limit of the research. Within the organisation, Six Sigma has been seen as the silver bullet to process inefficiencies and ineffectiveness. Evidence suggested that Lean was used as a derivative of Six Sigma called Lean Six Sigma. No concrete evidence at

the end of the pilot suggested the use of further process improvement methodologies.

In terms of Success Factors, findings were limited to interpretive observations and perceptions relayed by the process improvement management team. These findings promoted the thinking of the lack of “Adoption” by business operations due to “Legacy” thinking. The biggest hindrance to success was perceived as being executive “buy-in” and organisational culture.

The combination of the aforementioned criteria suggested that the selected Bank was therefore suitable for the research. The preliminary findings also supported the need to conduct the research as there was no consensus on what execution methodology would derive the best project success rate. Executive management buy-in and culture were also found to directly influence the use of the process improvement technical methods. The primary case study analysis provided greater insight into the Bank’s BPR project execution dynamics. The descriptions of the projects follow in the next section.

4.2 Case Study Selection

The case study protocol described in section 3.5.3 was used to identify the units of analysis, namely, BPR projects that would be considered suitable for use in conducting the case study. Appendix A summarises the application of the case study protocol to the seven projects that were considered for use. The two projects that were not considered for detailed analysis were, however, used to inform the case study cross section analysis. A brief description of all the projects, including the reasoning behind the selection or non-selection for analysis usage, appears in Table 4.1. Project Names are not provided so as to respect the Bank’s ethical and privacy requests.

Table 4.1: BPR Project Description and Selection Results

Project Number	Description	Selection Results
1	Project was focused on creating an Operating Model for the Southern African region Customer Services operations with the intention of creating scalability in operations.	Selected for case study detail analysis
2	Project was focused on deploying new systems to control access to applications within the organisation. It included the improvement of business processes.	Not selected for detailed case study analysis due to non-availability of information and restricted access to the project.
3	Project was focused on applying the **K**now **Y**our **C**ustomer (KYC) legislation model used in South Africa to their London operations.	Not selected for detailed case study analysis due to restricted access to project. Project team based internationally.
4	Project was de-scoped as part of Project 1 as it was understated in terms of complexity and size. The focus of the project was to centralise the London Client Service operations by moving most services to South Africa.	Selected for case study analysis. Evidence of planned activities exists for work completed.
5	Project was focused on improving the Payments processes for all types of transactions and	Selected for detailed case study analysis.

Project Number	Description	Selection Results
	currencies within the Corporate and Investment Division.	
6	Project was focused on de-coupling the credit book operations internationally and moving them to the Head Office based in South Africa.	Selected for detailed case study analysis. Even though moderate observations occurred, project contained critical analysis information.
7	This was a programme containing pieces of business process improvement and re-engineering work based on the introduction of new IT systems across multiple African based entities.	Selected for case study analysis. Evidence of planned activities exists for work completed.

4.3 Revision of Project Influential Factors Previously Researched

In Table 2.1 (b/f Section 2.2) reference is made to a consolidated view of prior researched BPR project influential factors in terms of a positive or negative outcome. Something worth noticing is that the phrases are not consistent in terms of negative and or positive reference. The phrases are open to interpretation if not stated correctly in terms of an objective outcome, for example:

- "Resistance to Change" is a negative phrase, implying that a project is likely to fail if it experiences any form of resistance towards the projects delivery objectives that would change the way the organisation and its people currently operate.
- "Aligned Human Resource Policies" is a positive phrase implying that the project is likely to succeed if the projects delivery objectives either align to current human resource policies or align human resource policies as part of its objective and or deliverables.
- "Communication" and "Project Management" are ambiguous phrases, implying good or bad and existence versus non-existence. The negative interpretation could lead to project failure, while the positive interpretation could lead to project success.

Taking into account the above narrative and the objective of the research, which is to ascertain how a BPR project can be executed successfully by prioritising and balancing the critical success factors, the phrases that are appearing in Table 2.1 (b/f Section 2.2) were restated in order to remove ambiguity and instil consistency in meaning. If the phrases were not positive in interpretation, they were restated to provide a positive interpretation. One could have selected the inverse way and state all phrases negatively, however, the same outcome would be produced, namely;

- If the project influential factor was stated as negative and evidence existed to suggest it was prevalent in the project, the positive stated phrase would not be present.
- If the project influential factor was stated as positive and evidence existed to suggest it was prevalent in the project, the negative stated phrase would not be present.

Restating the project influential factors with a positive outcome in mind resulted in the derived BPR project influential factors that could lead to a successful project as noted in Table 4.2. These would then be used when conducting the detailed

analysis, as they would provide a consistent view, which would not be open to interpretation and would also allow for a quantitative analysis leading to the conclusion of the case study results.

Table 4.2: Revised Project Influential Factors

Revised Project Influential Factors	
1.	No resistance to changes being introduced by the project
2.	BPR Philosophy between project and organisation is aligned
3.	Project has detailed Stakeholder Mapping and Engagement Plan in place
4.	Analysis of As-Is Processes was of good quality
5.	Design of To-Be Processes was of good quality
6.	Organisation is eager to invest in large BPR type projects
7.	Project outcomes is in alignment of Organisation Vision and Goals
8.	Organisation has a formal **B**usiness **P**rocess **M**anagement (BPM) structure in place
9.	Organisation has a Continuous Improvement Philosophy that aligns with the Organisation Strategy
10.	The project benefit calculations were realistic and undisputed
11.	Project had an excellent communication strategy and executed accordingly
12.	Project identified and trained all impacted stakeholders
13.	Project deliverables and outcomes motivated all impacted stakeholders
14.	Project had a detailed change management strategy and executed accordingly
15.	Project had a defined team structure with strong engagement and cohesion
16.	Project deliverables and outcomes aligned human resource policies within the organisation
17.	Project process design was customer centric
18.	Project was independently managed by an experienced Project Manager using an industry accepted project management methodology
19.	Project was prioritised according to organisation strategy and value outcomes
20.	Project standardised reengineered products inclusive of processes
21.	Executive sponsorship existed and Executive Sponsor actively participated
22.	Project had an undisputed compelling Business Case for change
23.	Project used a proven Process Improvement Methodology
24.	Line management ownership of project delivery was prevalent
25.	Project team had strong IT awareness and IT understanding when considering Business Process Integration into the IT system landscape
26.	Project had an approved **S**cope **o**f **W**ork (SOW) which was stable and or managed according to proper change control processes
27.	Selected Business Process Reengineering approach was aligned to organisation's acceptance of change. (Radical or Incremental)
28.	Project benefit expectations were undisputed and measurable
29.	Project implementation timeframe was realistic and planned for based on approved scope.
30.	Organisation had a strong relationship with delivery partner/vendor
31.	Organisation/Business Politics did not influence decisions made on the project
32.	Organisation had a high change adoption rate
33.	Organisation had a management structure that supported Project Execution

It is prudent at this point to provide an overview as to how Table 4.2 will be used in analysing the units of analysis. This will be covered in the next section.

4.4 BPR Project Influential Factor Analysis Approach

In order to provide an objective analysis of the BPR project influential factors evidence has to be available that supports the summary of the analysis presented in Figure 4.2. The collection of the evidence is described in Section 3.5.4 and the data collection protocol informed the relevance and the types of data that were collected and used as evidence. The types of evidence and data collected are listed next (see Appendices I and J for samples).

- Emails (see Appendix C for list of emails, descriptions and project alignment)
- Project Plans
- Business Case documents
- Project Charter documents
- Process engineering documents
- Board presentations
- Organisation structure documents
- Previous implemented project documents
- Human Resource (HR) policy documents
- Organisation operational policy documents
- IT and Business Architecture documents

By using the collected data listed above, the projects were analysed against each BPR project influential factor. Two examples are illustrated below.

Example 1:

Positive BPR project influential factor number 21 appearing in Table 4.2, “Executive sponsorship existed and Executive Sponsor actively participated,” was proved to be an absent factor for the first project analysed. This was proved by using emails such as those represented in Appendix C dated 10, 19 October 2011 where the executive sponsor continuously declined project meetings.

Example 2:

Positive BPR project influential factor number 10 appearing in Table 4.2, “The project benefit calculations were realistic and undisputed,” was proved to be present in the fourth analysed project and absent in the first analysed project. In the first project there were numerous versions of the Project Charter and Business Case documents. Many variances on the documents existed on the associated costs and benefits. In the fourth analysed project, however, evidence only suggested two versions of the Project Charter and Business Case existed with limited variances to cost and benefits.

The above examples highlight the approach that was used to analyse the projects against the BPR project influential factors. The next few sections provide contextual information on the projects, including a narrative summary of the analysis.

4.5 Overview of First Selected Project

The application of the case study selection protocol affirmed the selection of Project 1 to be used as part of the case study detailed analysis. The project had a suitably detailed project plan that highlighted the use of the Six Sigma DMAIC

(Define, Measure, Analyse, Improve, and Control) Methodology. All facets of the project were easily accessible, including all relevant documentation and team meetings.

4.5.1 Context of Project

In order to understand the project at a granular level, a contextual understanding has to be created on the project objectives, the scope of delivery, the stated benefits and stated costs. A timeline view of the key events was also created to support the case study analysis activity.

The objectives of the project were primarily aimed at improving productivity of all customer service agents in order to enable scalability for the absorption of outlying customer service centres, irrespective of locality. This objective was aligned to the strategic view of maintaining a flat cost structure year on year for five years. The scope of the project was initially large and encompassed both African and International customer service centres. It was decided in a short space of time that this was unrealistic and two projects were soon after created. One focusing on the target state operating model based at the head office while the other focused on centralising international customer service centres into the head office operations. The head office operation was based in South Africa (SA).

The focus of Project 1 was the head office operations and included the following deliverables:

- Documenting all As-Is Business Processes
- Conducting a Value Stream Analysis
- Designing and defining the To-Be Business Processes
- Designing and defining the new Operating Model
- Produce a Capacity Management Model
- Produce a Customer Service Agent Competency Framework inclusive of Job Descriptions and Key Result Areas
- Produce a Performance Measurement Framework
- Document Service and Operational Level Agreements for supporting and supported business units internal and external to the organisation.

The above had to be delivered over a period of 12 months at a cost of an estimated R7,226,052.00 realising a benefit after implementation of R17,864,632.10. The benefits calculations were made up of performing the following improvements and or implementations:

- Reduce outbound calls
- Improve agent occupancy rate
- Reduce manual effort of services
- Standardise business processes
- Reduce training time of new agents
- Reduce unit cost of service.

4.5.2 Analysis of Project

The following key points provide a summative narrative of the outcomes for the project: (see Appendix B for detailed analysis)

- The project ran for 9 months before it was stopped.
- The project was resourced with certified Six Sigma Black and Green Belt process engineers.
- The project had two Project Managers during the 9 months. Both resigned.

- The project deliverables and outcomes at different stages had to be approved, by the project resource's Line Manager, the Operational Executive, the Executive Sponsor, the Business Unit Senior Executive and the Line Manager's Executive. A consultative environment was created where there was no single accountable executive for decision making. It was all or nothing. All executives had to agree or no step was taken to move the project forward.
- There were multiple projects running within the **I**nformation **T**echnology (IT) investment portfolio that were duplicating deliverables and objectives. This was known to the BPR project team. However, risks that were raised were ignored by top management.
- No agreement could be reached on scope and funding due to the restructure of the business unit within the organisation and the use of multiple executive approvers (matrix management structures).
- Co-Sponsorship that was eventually decided upon eventually led to the project closure.
- The project spent the majority of the 9 months producing Project Charters and **B**usiness **C**ase **D**ocuments (BCD) in submission to various stakeholder requirements.
- Deliverables such as the Business Process As-Is Analysis and the Metrics Framework were being delivered irrespective of there being no agreement on scope and funding.
- Executive approvers ignored the project team's risks that were raised which included the risk of overlapping projects.
- Project managers were excluded from making decisions on the project. Accountability for decisions was between the various executives.
- Timelines on the project were always missed due to Executive indecision.
- Unrealistic expectations were created for business benefit realisation.
- Two different BPR execution approaches were performed by the project team, one following the Six Sigma DMAIC and the other following the **R**apid **I**mprovement **E**vent (RIE) approach. The alternate to Six Sigma was used to gather more buy-in for BPR philosophy and value add by implementing short focused initiatives.
- The Project restarted 11 months after the initial project with a different project team.

4.6 Overview of Second Selected Project

The application of the case study selection protocol also affirmed the selection of Project 4 to be used as part of the case study detailed analysis. The project had documents that provided evidence of planning for completed activities. Documents produced also provided evidence that the Six Sigma methodology and **R**apid **I**mprovement **E**vent (RIE) methodology were being used. Similarly, to project number 1, all facets of the project were easily accessible, including of all relevant documentation and team meetings.

4.6.1 Descriptive Context

Similar to the first project, a contextual understanding had to be created on the project objectives, the scope of delivery, the stated benefits and stated costs. A timeline view of the key events was also created to support the case study analysis activity.

The project objectives were primarily aimed at analysing all As-Is Business Processes with the aim of identifying which processes and supported business functions could be relocated to the head office operational environment. This objective was aligned to the strategic view of reducing the organisation footprint

outside of Africa. As mentioned previously, the scope of this project was initially part of Project 1 until it was split and formed as a new project. The project was later absorbed to form part of a larger IT initiative.

The focus of Project 4 included the following deliverables:

- Documenting of all As-Is Business Processes and supported Business Functions
- Identify Business Processes and Business functions to be relocated to the Head Office
- Optimise and align relocating business processes and functions
- Produce a Capacity Management Model
- Align impacted human resource policies.
- Document Service and Operational Level Agreements for supporting and supported business units internal and external to the organisation.

The above had to be delivered over a period of 6 months. No cost estimates or benefit calculations were delivered, however, the project spent in excess of R500,000.00 before the Process Engineers were pulled off the project due to no funding being approved.

4.6.2 Analysis of Project

The following key points provide a summative narrative of the outcomes for the project: (see Appendix B for detailed analysis)

- The project ran for approximately 5 months before the process engineer resources were pulled off the project.
- The project scope was initially part of Project 1 until it was de-scoped to form a new project.
- The project had no project manager assigned.
- The project deliverables and outcomes at different stages had to be approved, by the project resource's Line Manager, the Operational Executives for SA and London, the Executive Sponsors based in SA and in London, the Business Unit Senior Executive based in SA and the Line Manager's Executive based in SA. A consultative environment was created where there was no single accountable executive for decision making. It was all or nothing. All executives had to agree or no step was taken to move the project forward.
- There were multiple projects running within the **I**nformation **T**echnology (IT) investment portfolio that were duplicating deliverables and objectives. This was known to the BPR project team. After 5 months the project was pulled in to form part of an IT initiative.
- No agreement could be reached on scope and funding due to the restructure of the business unit within the organisation and the use of multiple executive approvers (matrix management structures).
- Co-Sponsorship also added to the complexity of the project.
- Deliverables such as the Business Process As-Is Analysis were delivered irrespective of there being no agreement on scope and funding.
- Executive approvers either ignored or took long to make a decision on the project teams' risks that were raised, which included the risk of overlapping projects and no executive support and direction being provided until the project was pulled in to form part of an IT project.
- Unrealistic expectations were created for business benefit realisation.
- Two different BPR execution approaches were performed by the project team, one following the Six Sigma DMAIC and the other following the **R**apid **I**mprovement **E**vent (RIE) approach. The alternate to Six Sigma was

used to gather more buy-in for BPR philosophy and value add by implementing short focused initiatives.

- The Project was a restart of a stopped project that commenced in August 2011 and was deemed closed by the BPR business unit after the resources were pulled of the new initiative.
- Timelines on the project was always missed due to executive indecision.

4.7 Overview of Third Selected Project

The application of the case study selection protocol further affirmed the selection of Project 5 to be used as part of the case study detailed analysis. The project was very similar to Project 1, with differences being in project teams, executive stakeholders and impacted business units. If one had to compare the timeline views, one would notice that the objectives and timelines were almost identical. The project also had a suitably detailed project plan that highlighted the use of certain Six Sigma and Lean Methodology components. The project teams and documentation were easily accessible, which made a detailed analysis possible.

4.7.1 Descriptive Context

In keeping with the theme of providing a contextual understanding of the project, the following paragraphs aim to improve understanding of the project objectives, the scope of delivery, the stated benefits and stated costs. A timeline view of the key events was also created to support the case study analysis activity.

The project objectives were primarily aimed at improving productivity of all payment service agents in order to enable scalability for the absorption of outlying payment service centres irrespective of locality. This objective was aligned to the strategic view of maintaining a flat cost structure year on year for five years. The scope of the project encompassed both African and International payment service centres.

The focus of Project 5 was firstly to develop a target operating model within the head office operations and included the following deliverables:

- Documenting all As-Is Business Processes
- Conducting a Value Stream Analysis
- Designing and defining the To-Be Business Processes
- Designing and defining the new Operating Model
- Produce a Capacity Management Model
- Produce a Payment Service Agent Competency Framework inclusive of Job Descriptions and Key Result Areas
- Produce a Performance Measurement Framework
- Document Service and Operational Level Agreements for supporting and supported business units internal and external to the organisation.

The above had to be delivered over a period of 12 months at a cost of an estimated R1,143,680.00 realising a benefit after implementation of R9.700,000.10. The benefits calculations were made up of performing the following improvements and or implementations:

- Reduce overtime cost
- Reducing rework on incorrect payments
- Improve Productivity by reducing absenteeism
- Standardise business processes
- Reduce unit cost of service.

4.7.2 Analysis of Project

The following key points provide a summative narrative of the outcomes for the project: (see Appendix B for detailed analysis)

- The project ran for 8 months before it was stopped.
- The project was resourced with certified Six Sigma Black and Green Belt process engineers.
- The project had three Project Managers during the 8 months. All resigned.
- The project deliverables and outcomes at different stages had to be approved, by the project resource's Line Manager, the Operational Executive, the Executive Sponsor, the Business Unit Senior Executive and the Line Manager's Executive. A consultative environment was created were there was no single accountable executive for decision making. It was all or nothing. All executives had to agree or no step was taken to move the project forward.
- There were multiple projects running within the **I**nformation **T**echnology (IT) investment portfolio that were duplicating deliverables and objectives. This was known to the BPR project team. However, risks that were raised were ignored by top management.
- No agreement could be reached on scope and funding due to the restructure of the business unit within the organisation and the use of multiple executive approvers (matrix management structures).
- Co-Sponsorship that was eventually decided upon eventually led to the project closure.
- The project spent the majority of the 8 months producing Project Charters and **B**usiness **C**ase **D**ocuments (BCD) in submission to various stakeholder requirements.
- Deliverables such as the Business Process As-Is Analysis and the Metrics Framework, were being delivered irrespective of there being no agreement on scope and funding.
- Executive approvers ignored the project team's risks that were raised, which included the risk of overlapping projects.
- Project managers were excluded from making decisions on the project. Accountability for decisions was between the various executives.
- Timelines on project were always missed due to Executive indecision.
- There was very limited buy-in for the project and its stated benefits upon completion.
- Executive approvers had a strong IT directive and agenda.

4.8 Overview of Fourth Selected Project

Project 6 was considered and selected as it provided critical information that would be used in concluding the analysis in terms of success and or failure factor ratification. There was, however, moderate engagement and observation of this project. Documentation, on the contrary was freely available for review, including minutes and project deliverables. The project reflected on the use of an alternate business process analysis and design tool as well as on how organisation relationships with organisation approved vendors' would impact project delivery.

4.8.1 Descriptive Context

As with all previously analysed projects, a descriptive context would provide a deeper understanding with regard to the project objectives, the scope of delivery, the stated benefits and stated costs. A timeline view of the key events was also created to support the case study analysis activity.

The project formed part of a larger Business Transformation project that focused on relocating internationally based organisation credit functions to the SA based head office. The full project was to be delivered as a phased approach with phase 1 being run as a separate project. Phase 1 of the project formed part of the case study and focused on analysing the as-is business operating model within the head office and London based credit operations in order to provide a recommended way to enhance the head office operations. The enhancements were to enable scalability to absorb all international credit operations within the Head Office operational business unit. The project was managed by the organisations business process area; however, deliverables were provided via a turnkey engagement. The turnkey engagement was used due to a new selected approach, which included toolsets for business process analysis and design.

The project initially planned to deliver within three months, however exceeded the timeframe by an additional half month. The project was planned to consume a budget of R1,791,608, however, it was provided an approved budget of R2,000,000. On all accounts this project was considered a success, as it delivered the scope within the approved budget while managing timelines via a formal change control process.

4.8.2 Analysis of Project

The following key points provide a summative narrative of the outcomes for the project: (see Appendix B for a detailed analysis)

- The Project was deemed successful as it delivered on scope and within approved budget. Timelines were managed appropriately via project change requests.
- The project was delivered approximately 15 days late.
- The project was managed by a single project manager who was held accountable for delivery reporting to the Business Transformation Programme Board responsible for the entire programme.
- Approval for scope, budget and delivery timelines was based on a Matrix Executive Board made up of relevant business representatives, with a single accountable Executive Sponsor. All debates were finally resolved with a decision from the Executive Sponsor.
- The project was run as part of a Business Transformation Programme, which formed part of an existing Business Investment Portfolio.
- The Scope changed in terms of de-scoping the delivery of the as-is operating model in favour of designing a target state operating model.
- Executive stakeholders were actively involved and discussions were part of the Business Transformation Programme Board with all project representatives present.
- Line management was not part of the Executive Programme Board.

4.9 Overview of Fifth Selected Project

The application of the case study selection protocol further affirmed the selection of Project 7 to be used as part of the case study detailed analysis. The project deliverables contained evidence of project planning. The project was also dissimilar to the previous three projects as this eventually was run as a program containing projects that were made up of sub projects that delivered on behalf of other IT programmes. The project deliverables also highlighted the use of certain Six Sigma and Lean methodology components. Similarly, to Projects Number 1, 4 and 5, all facets of the project were easily accessible, including all relevant documentation and team meetings.

4.9.1 Descriptive Context

Due to the variant nature of this project, it was also crucial to provide a descriptive context in order to gain a deeper understanding with regard to the project objectives, the scope of delivery, the stated benefits and stated costs. A timeline view of the key events was also created to support the case study analysis activity.

The project objectives were primarily aimed at delivering as-is business processes and associated measurement frameworks for a business area that had engaged in a large IT initiative to change all Africa core systems. The project initially started as a project concerned with a single objective, namely, documenting all as-is business processes that occurred within five selected African countries. This then evolved to the delivery of a further objective, namely that of understanding all business performance measurement frameworks that were the result of poor customer and partner survey scores. The eventual programme ran to deliver these two objectives on behalf of an IT program.

The documentation of the as-is business processes, sub-project A, was run within a period of 8 months with an initial timeframe of 5 months. There were no associated benefits to this project. It was completed with a cost of R1,300,781.00 The second objective of delivering the as-is business performance measurement framework, sub-project B, extended beyond the case study timelines, however, the Project Charter and BCD were approved to be completed at a cost of R400,000.00 over a period of 1 month.

4.9.2 Analysis of Project

The following key points provide a summative narrative of the outcomes for the project: (see Appendix B for a detailed analysis)

- Sub-project A was deemed successful as it delivered on scope and within approved budget. Timelines were managed appropriately via project change requests.
- Sub-project B delivered Project Charter as per agreed revised date. The project was also managed via project change requests.
- Sub-projects 7 A and B were managed by a single project manager who was held accountable for delivery reporting into the IT Programme Board responsible for the IT initiative delivery.
- Approval for scope, budget and delivery timelines was based on a Matrix Executive Board made up of relevant business representatives, with a single accountable Executive Sponsor. All debates were finally resolved with a decision from the Executive Sponsor.
- The project was run as part of an IT Programme, which formed part of an existing IT Investment Portfolio.
- Sub-project B did experience flux in terms of Scope, for a period of time due to the number of impacting business units, however the Executive Sponsor stepped in and finalised Scope and Budget, for the delivery of a Project Charter and a BCD.
- All deliverables were delivered as per revised plans and within approved budgets.
- Executive stakeholders were actively involved and discussions were part of the IT Programme Board with all project representatives present.
- Line management was not part of the Executive IT Programme Board.
- Due to all deliverables for Sub-projects 7 A and B being met as per approvals obtained for budget and scope while maintaining all changes via a formalised change control process, this project was seen as successful

overall as part of the case study even though sub-project B was still in progress at the end of the case study.

The next section will focus on the aggregated analysis results.

4.10 Cross Case Study Analysis

This section will reflect on the detailed case study analysis of the units of study, namely, the five BPR projects executed within the Bank. Certain aspects will also be derived from the two BPR projects (briefly described in Appendix B) that were not selected for a detailed analysis, predominantly due to lack of project observation and team engagement. In the first and second analysed projects, it was found that changes in sponsorship and instability in organisational structure negatively impacted the project outcome. This was not the case in the fourth and fifth projects that were analysed. In addition, it was noticed that these projects were also faced with negative influences due to multiple decision makers. This analysis informed the identification of the new factors depicted below (reflected in Table 4.2):

- Organisation Functions / Operations Structure was stable during the execution of the project.
- Single point of accountability and decision making was applied on the project (inherent within organisation management structures).
- Executive Sponsor for the project remained stable.

It could be argued that these projects were executed in the same organisation and therefore they should be exposed to the same environmental challenges. The Bank in question that was studied, however, was divided into three major business units, each with its own leadership and decision making authority. The business units themselves were further divided into geographical denominations and operational silo's. This complexity meant that projects were exposed to different environmental attributes depending on the execution landscape of the project, which resulted in different outcomes once they were analysed against the BPR project influential factors.

Using the techniques described in Chapter 3 on QCA and particularly the fsQCA nuance the qualitative cross case analysis revealed the results as described in section 4.9.1. A new conceptual model was then derived, using these results, and is followed by a detailed description thereafter. The last focus of this section would be to summarise the need for a BPR execution method that is centred on the BPR project influential factors.

4.10.1 Analysis Cross Reference

As mentioned earlier, the fsQCA technique was used to conduct the cross case analysis to reveal the set relationships. The first step required the creation of a matrix outlining the cases, conditions and outcome. Figure 4.2 summarises the descriptive analysis conducted on each BPR project. This was used as the baseline to develop the fsQCA matrix required for the cross case analysis.

As per the QCA Application model (b/f Section 3.5.6), the BPR project success factors had to be categorised in order to ensure a reduction of conditions that would be used to develop the fsQCA matrix for analysis. This will be followed by the analysis of the fsQCA Matrix as well as the analysis of the negated fsQCA Matrix.

BPR Project Success Factor	Project 1	Project 2	Project 3	Project 4	Project 5
No resistance to changes being introduced by the project	✗	✗	✗	✓	✓
BPR Philosophy between project and organisation is aligned	✓	✗	✗	✓	✓
Project has detailed Stakeholder Mapping and Engagement Plan in place	✗	✗	✗	✓	✓
Analysis of As-Is Processes was of good quality	✓	✓	✓	✓	✗
Design of To-Be Processes was of good quality	✗	✗	✗	✗	✓
Organisation is eager to invest in large BPR type projects	✗	✗	✗	✓	✓
Project outcomes is in alignment of Organisation Vision and Goals	✓	✓	✓	✓	✓
Organisation has a formal Business Process Management (BPM) structure in place	✗	✗	✗	✗	✗
Organisation has a Continuous Improvement Philosophy aligned with the Organisation Strategy	✓	✓	✗	✗	✗
The project benefit calculations were realistic and undisputed	✗	✗	✗	✓	✓
Project had an excellent communication strategy and executed accordingly	✓	✗	✓	✓	✓
Project identified and trained all impacted stakeholders	✓	✗	✓	✗	✗
Project deliverables and outcomes motivated all impacted stakeholders	✗	✗	✗	✗	✗
Project had a detailed change management strategy and executed accordingly	✓	✗	✓	✓	✓
Project had a defined team structure with strong engagement and cohesion	✓	✗	✓	✓	
Project deliverables and outcomes aligned human resource policies within the organisation	✓	✓	✓	✓	✓
Project process design was customer centric	✓	✗	✓	✗	✗
Project independently managed by an experienced PM using industry accepted project management methodology	✗	✗	✗	✓	✓
Project was prioritised according to organisation strategy and value outcomes	✗	✗	✗	✓	✓
Project standardised reengineered products inclusive of processes	✗	✗	✗		✓
Executive sponsorship existed and Executive Sponsor actively participated	✗	✗	✗	✓	✓
Project had an undisputed compelling Business Case for change	✓	✗	✗	✓	✓
Project used a proven Process Improvement Methodology	✓	✓	✓	✓	✓
Line management ownership of project delivery was prevalent	✓	✓	✓	✗	✗
Project has strong IT awareness & understanding when considering Business Process Integration in the IT system landscape	✗	✗	✗	✓	✗
Project has approved Scope of Work (SOW) which was stable and/or managed through a change control processes	✗	✗	✗	✓	✓
Selected BPR approach aligned to organisation's acceptance of change (Radical or Incremental)	✓	✗	✗	✓	✓
Project benefit expectations were undisputed and measurable	✗	✗	✗	✓	✓
Project implementation timeframe was realistic and planned for based on approved scope.	✗	✗	✗	✓	✓
Organisation had a management structure that supported Project Execution	✗	✗	✗	✓	✓
Organisation Functions/ Operations Structure was stable during the execution of the project	✗	✗	✗	✓	✓
Single point of accountability & decision making applied (inherent within organisation management structures)	✗	✗	✗	✓	✓
Organisation/Business Politics did not influence decisions made on the project	✗	✗	✗	✗	✓
Organisation had a high change adoption rate	✗	✗	✗	✓	✓
Executive Sponsor for the project remained stable	✗	✗	✗	✓	✓
Organisation had stable, standardised tools for business process analysis and design	✗	✗	✗	✓	✓
Organisation had a strong relationship with delivery partner/vendor	✓	✓	✓	✓	✗

Figure 4.2: Summary of Factor Presence across the Selected Projects

4.10.1.1 Categorisation of BPR Project Success Factors

As stated in section 3.5.6 the categorisation of the BPR project success factors was to enable the reduction of conditions that would be used to develop the fsQCA matrix. This in turn would be used for the cross case analysis. La Rock, 2003, in her research paper "Examining the relationship between Business Process Reengineering and Information Technology" (see Appendix H) referencing the work of Al-Mashari and Zairi, 1999, highlighted five categories of BPR success factors. These are:

- Change of Management Systems and Culture Factors
- Management Support Factors
- Organisation Structure Factors
- BPR Project Management Factors
- IT Infrastructure Factors

These were adapted to suit the current research needs as La Rock, 2003, highlighted categories based on the success factors that were internally focused on the execution of a BPR project only, without any consideration for the execution environment, namely, the organisation in which the BPR project is being executed. Alternate classifications and categorisations were also considered were organisation culture and structure were separated (Eftekhari & Akhavan, 2013) (Nisar, et al., 2014) and where the project management category was stated as being inclusive of process analysis and planning. Taking these into consideration, the researcher defined the following categories:

- Project Management (represented by "PM")
- Change Management (represented by "CM")
- Management Support (represented by "MS")
- Information Technology (represented by "IT")
- Organisation Structure (represented by "OS")
- Organisation Behaviour (represented by "OB")

Table 4.3 represents the initial categorisation of the BPR project success factors. This was used to facilitate the creation of the fsQCA Matrix, which will be discussed next.

Table 4.3: Categorisation of BPR Project Success Factors

Factor Category	BPR Project Success Factor
PM	BPR Philosophy between project and organisation is aligned
PM	Analysis of As-Is Processes was of good quality
PM	Design of To-Be Processes was of good quality
PM	Project outcomes is in alignment of Organisation Vision and Goals
PM	The project benefit calculations were realistic and undisputed
PM	Project had a defined team structure with strong engagement and cohesion
PM	Project deliverables and outcomes aligned human resource policies within the organisation
PM	Project process design was customer centric

Factor Category	BPR Project Success Factor
PM	Project was independently managed by an experienced Project Manager using an industry accepted project management methodology
PM	Project was prioritised according to organisation strategy and value outcomes
PM	Project standardised reengineered products inclusive of processes
PM	Project had an undisputed compelling Business Case for change
PM	Project used a proven Process Improvement Methodology
PM	Project had an approved **S**cope **o**f **W**ork (SOW) which was stable and or managed according to proper change control processes
PM	Project benefit expectations were undisputed and measurable
PM	Project implementation timeframe was realistic and planned for based on approved scope.
CM	No resistance to changes being introduced by the project
CM	Project has detailed Stakeholder Mapping and Engagement Plan in place
CM	Project had an excellent communication strategy and executed accordingly
CM	Project identified and trained all impacted stakeholders
CM	Project deliverables and outcomes motivated all impacted stakeholders
CM	Project had a detailed change management strategy and executed accordingly
MS	Executive sponsorship existed and Executive Sponsor actively participated
MS	Line management ownership of project delivery was prevalent
IT	Project team had strong IT awareness and IT understanding when considering Business Process Integration into the IT system landscape
OS	Organisation has a formal **B**usiness **P**rocess **M**anagement (BPM) structure in place
OS	Organisation had a management structure that supported Project Execution
OS	Organisation Functions/ Operations Structure was stable during the execution of the project
OS	Single point of accountability and decision making was applied on the project (inherent within organisation management structures)
OS	Executive Sponsor for the project remained stable
OS	Organisation had stable, standardised tools for business process analysis and design
OS	Organisation had a strong relationship with delivery partner/vendor
OB	Organisation is eager to invest in large BPR type projects
OB	Organisation has a Continuous Improvement Philosophy that aligns with the Organisation Strategy

Factor Category	BPR Project Success Factor
OB	Selected Business Process Reengineering approach was aligned to organisation's acceptance of change. (Radical or Incremental)
OB	Organisation/Business Politics did not influence decisions made on the project
OB	Organisation had a high change adoption rate

4.10.1.2 Creation of fsQCA Matrix

The creation of the fsQCA Matrix was not as simple as initially thought, as described in Section 3.2.6 where the percentage of the presence of the factors would be taken for each category for each project. Let us first look at the initial results of these percentages before elaborating on why it needed to be fixed and then how it was fixed. Table 4.4 represents the initial results.

Table 4.4: Initial Categorised BPR Success Factor Percentage Results

Factor Category	Project 1 Result	Project 2 Result	Project 3 Result	Project 4 Result	Project 5 Result
PM	0.50	0.25	0.38	0.81	0.81
CM	0.50	0.00	0.50	0.67	0.67
MS	0.50	0.50	0.50	0.50	0.50
IT	1.00	1.00	0.00	1.00	0.00
OS	0.14	0.14	0.14	0.86	0.71
OB	0.40	0.20	0.00	0.60	0.80

To refresh our memory, the following fsQCA interval model was selected for use (b/f Section 3.5.6).

Table 4.5: Selected fsQCA Interval Model

fsQCA Set Value Description	fsQCA Value
Full Set Membership	1
Set Membership Mostly In	0.8
Set Membership More or Less In	0.6
Set Membership More or Less Out	0.4
Set Membership Mostly Out	0.2
Full Set Non-Membership	0

Looking at the initial results, first and foremost, the problem of ambiguity (Schneider & Wagemann, 2007) (Ragin, 2008) was experienced where the results with the value 0.5 were achieved. This score would be unacceptable within the model because it could not be calibrated to represent any fsQCA interval as it is a benchmark number used for cross over when conducting fsQCA analysis (Ragin, et al., 2008). It is cross over in the sense of whether the truth table value will have

a “1” or a “0”. Secondly calibration of the scores would be required to represent an fsQCA interval.

The technique used for re-evaluating the conditions in order to remove contradictions was applied to the first problem. This required using substantive knowledge (Schneider & Wagemann, 2007) (Ragin, 2008) in order to re-categorise some BPR success factors or split one in to two factors or by adding new factors. Four factor categories required re-evaluation in order to remove the ambiguous values; namely, PM, CM, MS and IT.

Using the research paper authored by La Rock, 2003, the re-evaluation resulted in the following changes:

- The factor under PM, “Project deliverables and outcomes aligned human resource policies within the organisation”, was re-categorised to CM.
- The factor under OS, “Organisation had stable, standardised tools for business process analysis and design”, was re-categorised to IT.
- A new factor was added to the IT category, “There is adequate alignment between IT and BPR Strategy”.
- A new factor was added to the MS category, “Management recognised and provided support for Risk Management”.

The changes described above then resulted in the following category value results after recalculation as depicted in Table 4.6.

Table 4.6: Recalculated Categorised BPR Success Factor Percentage Results

Factor Category	Project 1 Result	Project 2 Result	Project 3 Result	Project 4 Result	Project 5 Result
PM	0.47	0.20	0.33	0.80	0.80
CM	0.57	0.14	0.57	0.71	0.71
MS	0.33	0.33	0.33	0.67	0.33
IT	0.33	0.33	0.00	1.00	0.33
OS	0.17	0.17	0.17	0.83	0.67
OB	0.40	0.20	0.00	0.60	0.80

The changes that were made removed all ambiguous values, which left us with the next step, calibration of values to represent the fsQCA intervals. Calibration would not impact the analytic results and is a step recommended by Ragin, 2008. Schneider and Wagemann, 2007, also suggested that a researcher should not over interpret the substantive meaning of values that are calibrated, as they have a negligible impact on the outcome of the analysis. Calibration took the form of rounding the resultant value to the nearest fsQCA interval. This resulted in the finalised category values, which would be used in the fsQCA Matrix for analysis.

In keeping with QCA terminology, the categories will also be referred to as the “conditions”. This left us with the “outcome” values for each project which is termed as a “Successful Outcome” or “SO”. If a project was classified as a successful project, it would receive a value of “1” while the reverse will be applied to a failed project which would receive a value of “0”. The reason for not simply taking the percentage scores of all present BPR success factors was that the research only qualified projects either as a success or a failure. There were no intermediate intervals such as “mostly succeeded” or “mostly failed” as would have been the

case if we approached the assignment of values based on the percentages of present BPR success factors. Table 4.7 outlines the final fsQCA Matrix. This is followed by a detailed description of the fsQCA Analysis.

Table 4.7: Finalised fsQCA Matrix

fsQCA Terms	Project 1 Values	Project 2 Values	Project 3 Values	Project 4 Values	Project 5 Values
PM	0.40	0.20	0.40	0.80	0.80
CM	0.60	0.20	0.60	0.80	0.80
MS	0.40	0.40	0.40	0.60	0.40
IT	0.40	0.40	0.00	1.00	0.40
OS	0.20	0.20	0.20	0.80	0.60
OB	0.40	0.20	0.00	0.60	0.80
SO	0.00	0.00	0.00	1.00	1.00

4.10.1.3 Analysis of fsQCA Matrix

As mentioned previously, the fsQCA tool was used to calculate all the values required for the analysis. The fsQCA tool would focus on the values for consistency and coverage in order to facilitate claims made for sufficiency by highlighting causal set relations. Analysis would also concentrate on simplifying resultant causal set relations by applying the counterfactual analysis technique. The results would then be verified using the Veristic approach. The first step of the analysis required the creation of the truth table that would be used for the analysis of the solution terms. The finalised fsQCA Matrix was input into the fsQCA tool to derive the truth table represented by Figure 4.3. Originally, the fsQCA tool did not include any values for the outcome parameter “SO”.

PM	CM	MS	IT	OS	OB	Number of Cases	SO
0	1	0	0	0	0	2	
1	1	1	1	1	1	1	
1	1	0	0	1	1	1	
0	0	0	0	0	0	1	
1	1	1	1	1	0	0	
1	1	1	1	0	1	0	
1	1	1	1	0	0	0	
1	1	1	0	1	1	0	
1	1	1	0	1	0	0	
1	1	1	0	0	1	0	
1	1	1	0	0	0	0	
1	1	0	1	1	1	0	
1	1	0	1	1	0	0	
1	1	0	1	0	1	0	
1	1	0	1	0	0	0	
1	1	0	0	1	0	0	
1	1	0	0	0	1	0	
1	1	0	0	0	0	0	
1	0	1	1	1	1	0	
1	0	1	1	1	0	0	
1	0	1	1	0	1	0	
1	0	1	1	0	0	0	
1	0	1	0	1	1	0	
1	0	1	0	1	0	0	
1	0	1	0	0	1	0	
1	0	1	0	0	0	0	
1	0	0	1	1	1	0	
1	0	0	1	1	0	0	
1	0	0	1	0	1	0	
1	0	0	1	0	0	0	
1	0	0	0	1	1	0	
1	0	0	0	1	0	0	
1	0	0	0	0	1	0	
1	0	0	0	0	0	0	
0	1	1	1	1	1	0	
0	1	1	1	1	0	0	
0	1	1	1	1	0	1	0
0	1	1	1	1	0	0	0
0	1	1	1	0	1	1	0
0	1	1	1	0	1	0	0
0	1	1	1	0	0	1	0
0	1	1	1	0	0	0	0
0	1	1	0	1	1	1	0
0	1	1	0	1	1	0	0
0	1	1	0	1	0	1	0
0	1	1	0	1	0	0	0
0	1	1	0	0	1	1	0
0	1	1	0	0	1	0	0
0	1	1	0	0	0	1	0
0	1	1	0	0	0	0	0
0	1	0	1	1	1	1	0
0	1	0	1	1	1	0	0
0	1	0	1	1	0	1	0
0	1	0	1	1	0	0	0
0	1	0	1	0	1	1	0
0	1	0	1	0	1	0	0
0	1	0	1	0	0	1	0
0	1	0	1	0	0	0	0
0	1	0	0	1	1	1	0
0	1	0	0	1	1	0	0
0	1	0	0	1	0	1	0
0	1	0	0	1	0	0	0
0	1	0	0	0	1	1	0
0	1	0	0	0	1	0	0
0	1	0	0	0	0	1	0
0	1	0	0	0	0	0	0
0	0	1	1	1	1	1	0
0	0	1	1	1	1	0	0
0	0	1	1	1	0	1	0
0	0	1	1	1	0	0	0
0	0	1	1	0	1	1	0
0	0	1	1	0	1	0	0
0	0	1	1	0	0	1	0
0	0	1	1	0	0	0	0
0	0	1	0	1	1	1	0
0	0	1	0	1	1	0	0
0	0	1	0	1	0	1	0
0	0	1	0	1	0	0	0
0	0	1	0	0	1	1	0
0	0	1	0	0	1	0	0
0	0	1	0	0	0	1	0
0	0	1	0	0	0	0	0
0	0	0	1	1	1	1	0
0	0	0	1	1	1	0	0
0	0	0	1	1	0	1	0
0	0	0	1	1	0	0	0
0	0	0	1	0	1	1	0
0	0	0	1	0	1	0	0
0	0	0	1	0	0	1	0
0	0	0	1	0	0	0	0
0	0	0	0	1	1	1	0
0	0	0	0	1	1	0	0
0	0	0	0	1	0	1	0
0	0	0	0	1	0	0	0
0	0	0	0	0	1	1	0
0	0	0	0	0	1	0	0
0	0	0	0	0	0	1	0

Figure 4.3: fsQCA Matrix Truth Table Excluding Outcome Values

The next step was to calculate the most complex solution excluding any logical remainders. Logical remainders are the truth table columns that have 0 cases assigned to them. In the tool it is a simple matter of deleting these rows. After deleting the rows, the values for the outcome variable "SO" were added. The new truth table that was used to calculate the most complex solution appears below in Table 4.8. (NOTE: the "Specify Analysis" option was used as Schneider and Wagemann, 2007, cautioned against the use of the "Standard Analysis" option which provides the three types of solution terms, namely, complex, intermediate and parsimonious by virtue of including logical remainders that are not necessarily based on substantive knowledge.)

Table 4.8: Original Truth Table Analysed Excluding Logical Remainders

PM	CM	MS	IT	OS	OB	Number of Cases	SO
0	1	0	0	0	0	2	0
1	1	1	1	1	1	1	1
1	1	0	0	1	1	1	1
0	0	0	0	0	0	1	0

The output of the fsQCA tool (b/f Section 3.5.6) appears in Figure 4.4 below:

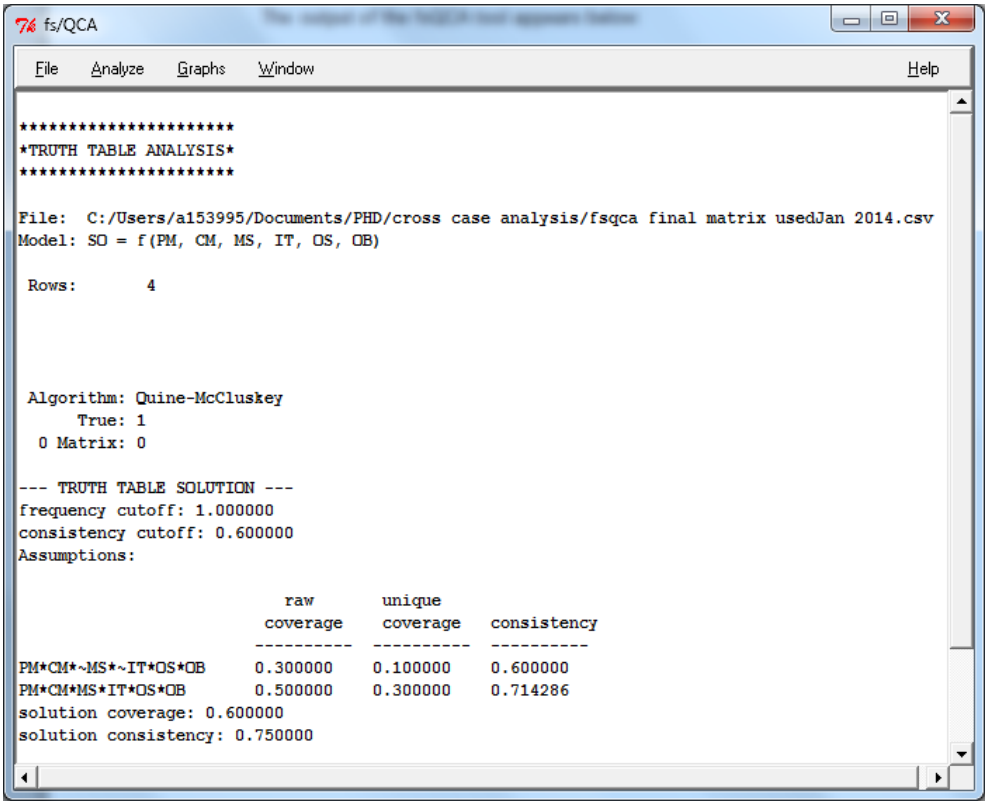


Figure 4.4: Output of Analysis - Most Complex Solution

As can be seen in the output of the fsQCA tool, due to limited diversity the solution term was quite complex and included all conditions for the two cases that exhibited the positive outcome of a successful project. To reiterate the tool output the most

complex solution term has met the consistency benchmark of 0.75 and is defined as follows:

PM*CM*~MS*~IT*OS*OB + PM*CM*MS*IT*OS*OB → SO

The above solution term can be interpreted as a successful BPR project and is most likely influenced by the presence of project management, change management, organisational structure, organisational behaviour and the absence of information technology and management support categorised BPR successful project influential factors or the presence of all the categorised BPR successful project influential factors.

We now need to move to a more intermediate form of the solution using substantive knowledge, which would facilitate the use of logical remainders. This process is the counterfactual analysis process.

If one looks at our complex solution term, one finds that one conjunctural causal condition has the presence of MS and IT, while the other conjunctural causal condition has the absence of MS and IT (absence is denoted by the use of "~"). In order to simplify the solution term and reach for the intermediate solution term, one will use two additional truth table rows or logical remainders, depicting two counterfactual cases. A new truth table for analysis is then formed, represented by Table 4.9.

Table 4.9: Truth Table including Counterfactual Cases

PM	CM	MS	IT	OS	OB	Number of Cases	SO
0	1	0	0	0	0	2	0
1	1	1	1	1	1	1	1
1	1	0	0	1	1	1	1
0	0	0	0	0	0	1	0
1	1	0	1	1	1	0	1
1	1	1	0	1	1	0	1

The truth table above has two additional rows that do not have empirical evidence as depicted by the "0" under the "Number of Cases" column. These are the counterfactual cases. The reason for selecting these counterfactual cases is based on the assumptions that are made using the available substantive knowledge or empirical evidence. The assumption is based on the fact that if one has separate cases that represent a successful outcome with the combined absence or presence of the MS and IT conditions, one could assume that the absence of one of these conditions exclusively will most likely also yield a successful outcome. The two counterfactual cases represented by the last two rows in the above truth table describe the following counterfactual cases:

PM*CM*~MS*IT*OS*OB → SO

PM*CM*MS*~IT*OS*OB → SO

Using the new truth table, the revised analysis revealed the intermediate solution term (reiterated from Figure 4.5):

PM*CM*OS*OB → SO

The new solution term has only one conjunctural causal condition which removed the equifinality property exhibited by the most complex solution term. One also notices that the conjunctural causal condition consistency value is the same as the solution term value, which is 0.75, and meets the benchmark criteria. The original analysis, however, yielded lower than 0.75 scores for the conjunctural causal conditions and only the solution term met the benchmark criteria; therefore, a stronger argument exists for claiming that a successful BPR project is most likely to occur if the project management, change management, organisational structure and organisational behaviour categorised BPR successful project influential factors are present.

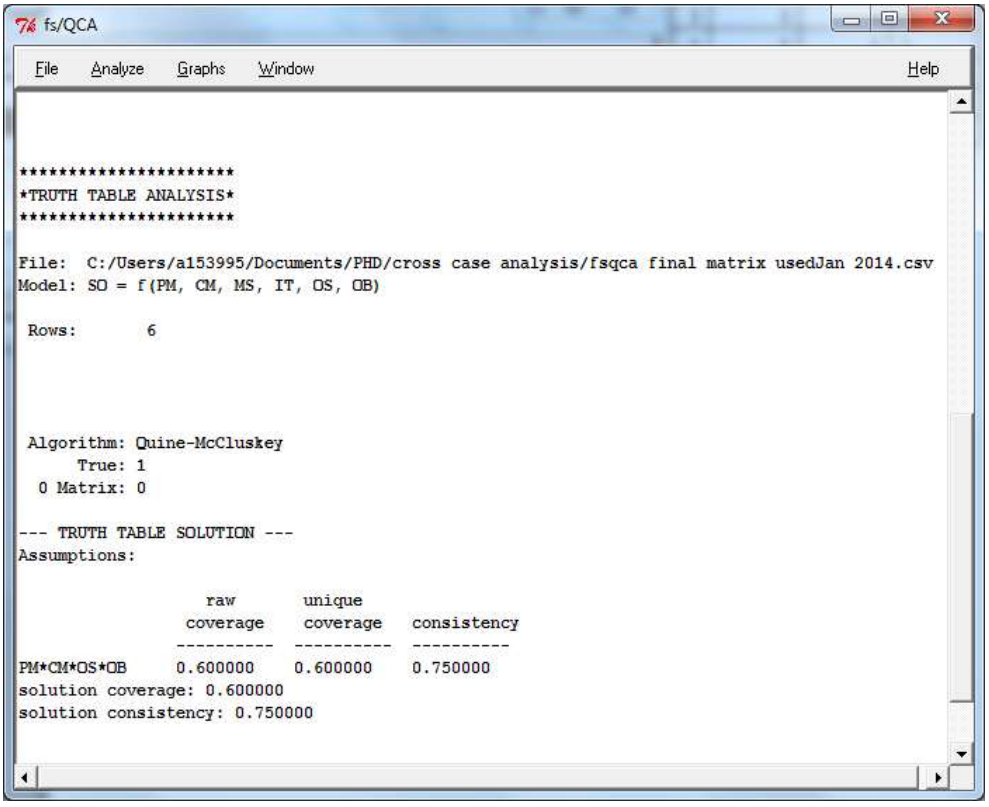


Figure 4.5: Output of Analysis - Intermediate Solution Term

As can bel noticed, the coverage scores have not yet been mentioned. The coverage scores will play an important part in the final analysis after the intermediate solution term has been verified using the Veristic approach. In order to verify the intermediate solution term, the sufficiency scores will have to be calculated for all possible conjunctural causal conditions. The researcher has also selected the threshold for the number of cases to be the maximum number of cases exhibiting the successful outcome which is two. Firstly, any causal condition, conjunctural or not, will be excluded if the consistency score is not 0.75 or greater. Then any causal condition, conjunctural or not will be excluded if the Veristic threshold is not met. This will leave us with all relevant causal conditions that need to be investigated in terms of greater importance, keeping in mind that the intermediate solution term will also have to be verified at the same time. Table 4.10 represents the final conditions relevant for further investigation (see Appendix Q for detailed output of Sufficiency Analysis).

Table 4.10: Final Set of Relevant Conjunctural Causal Conditions

Conjunctural Causal Conditions	Consistency	Coverage	0.75 Consistency Benchmark is Met	Veristic Threshold (2 Cases) is Met
PM*CM*OS*OB	0.75	0.60	Yes	Yes
CM*OS*OB	0.75	0.60	Yes	Yes
PM*OS*OB	0.75	0.60	Yes	Yes
OS*OB	0.75	0.60	Yes	Yes

Table 4.10 highlights the presence of three additional possible conjunctural causal conditions. However, what is interesting is that all possible conjunctural causal conditions are equally relevant as their coverage scores are all equal to 0.60. No solution term based on sufficiency analysis is of higher importance than the other. The problem though, is proving by using substantive knowledge that the most parsimonious of the four solution terms can be the final result. However, this problem can be overcome by analysing the negated matrix in search of contradictions and by validating if the reverse holds true if the absence of the same conjunctural causal conditions has an influence on the failure of BPR projects. Remember the asymmetry rule requires analysis of the negative cases as it cannot be assumed that if "A" most likely leads to "B" that "~A" most likely leads to "~B" (Schneider & Wagemann, 2007) (Ragin, 2008)

In other words, there should not be any contradictory situations as indicated below:

- PM*CM*OS*OB → ~SO
- CM*OS*OB → ~SO
- PM*OS*OB → ~SO
- OS*OB → ~SO

However, the following situations should exist:

- ~PM*~CM*~OS*~OB → ~SO
- ~CM*~OS*~OB → ~SO
- ~PM*~OS*~OB → ~SO
- ~OS*~OB → ~SO

In order for us to substantiate that the most parsimonious solution is OS*OB→SO, ~OS*~OB → ~SO has to be more relevant than the other solution terms above. This means that ~OS*~OB → ~SO needs to exhibit the highest coverage scores. The negated fsQCA Matrix analysis follows next.

4.10.1.4 Analysis of the negated fsQCA Matrix

As mentioned in the previous section, the analysis of the negated matrix will be conducted in two parts. The first part will focus on excluding any fallible claims suggested by the analysis of the non-negated fsQCA matrix. The second part will then look at generating substantive knowledge using the negated fsQCA matrix analysis that will allow us to conclude which solution term is more relevant, as the initial analysis results did not provide any conclusive evidence as to which solution term, intermediate or parsimonious, would be used to claim the relevance order of the categorised BPR successful project influential factors.

Let us begin with the first part by firstly creating the fsQCA matrix that will be input into the fsQCA tool for analysis. This is done by merely negating the SO column on the matrix and is represented by Table 4.11. (Note, when using the fsQCA tool, a new matrix does not have to be input as it allows for the negation of the outcome variable by selecting the "Set Negated" option (Ragin, et al., 2008)).

Table 4.11: fsQCA Matrix where the Outcome is Negated

fsQCA Terms	Project 1 Values	Project 2 Values	Project 3 Values	Project 4 Values	Project 5 Values
PM	0.40	0.20	0.40	0.80	0.80
CM	0.60	0.20	0.60	0.80	0.80
MS	0.40	0.40	0.40	0.60	0.40
IT	0.40	0.40	0.00	1.00	0.40
OS	0.20	0.20	0.20	0.80	0.60
OB	0.40	0.20	0.00	0.60	0.80
~SO	1.00	1.00	1.00	0.00	0.00

In order to ascertain that there are no contradictory conjunctural causal conditions present, one would only need to perform a sufficiency analysis on the fsQCA matrix represented by Table 4.12. The analysis revealed that no conjunctural/causal conditions met the 0.75 benchmark (see Appendix R). This would have indicated sufficiency for outcome ~SO; therefore, there are no contradictory conjunctural causal conditions and the original four solution terms appearing in Table 4.10 remain. The relevant solution term with CM*PM*OS*OB → SO remains the substantiated intermediate solution term on which all further claims can be based.

The second part of the analysis would either confirm the above statement of CM*PM*OS*OB → SO being the only substantiated solution term based on substantive knowledge, or it would facilitate substantiating one of the other three solution terms on which further research claims can be based. This involved creating a fully negated fsQCA matrix, appearing below in Table 4.12. (Note, when using the fsQCA tool a new matrix does not have to be input as it allows for the negation of the condition and outcome variables by selecting the "Set Negated" option (Ragin, et al., 2008)).

Table 4.12: Fully Negated fsQCA Matrix

fsQCA Terms	Project 1 Values	Project 2 Values	Project 3 Values	Project 4 Values	Project 5 Values
~PM	0.60	0.80	0.60	0.20	0.20
~CM	0.40	0.80	0.40	0.20	0.20
~MS	0.60	0.60	0.60	0.40	0.60
~IT	0.60	0.60	1.00	0.00	0.60
~OS	0.80	0.80	0.80	0.20	0.40
~OB	0.60	0.80	1.00	0.40	0.20
~SO	1.00	1.00	1.00	0.00	0.00

The analysis of the fully negated fsQCA matrix will follow a process similar to the analysis of the original fsQCA matrix in terms of conducting a sufficiency analysis of all possible conjunctural/causal conditions that are verified by using the Veristic validation technique and by using the maximum benchmark of three cases. No truth table would be derived for analysing the most complex solution term and no counterfactual analysis was conducted in order to search for an intermediate solution term based on substantive knowledge. The reason for the above deviation is that the research is focused on the positive nature of executing a BPR project, namely a successful outcome. The negated fsQCA matrix analysis is used to validate and strengthen any claims made by the analysis of the original fsQCA matrix. Table 4.13 represents the tool output of the sufficiency analysis integrated with the consistency benchmark and veristic tests.

Table 4.13: Output of Sufficiency Analysis for Fully Negated fsQCA Matrix

Conjunctural/Causal Conditions	Consistency	Coverage	0.75 Consistency Benchmark is Met	Veristic Threshold (3 Cases) is Met
~PM*~CM*~MS*~IT*~OS*~OB	0.88	0.47	Yes	No
~PM*~MS*~IT*~OS*~OB	0.90	0.60	Yes	Yes
~PM*~CM*~MS*~IT*~OS	0.88	0.47	Yes	No
~PM*~CM*~MS*~IT*~OB	0.88	0.47	Yes	No
~PM*~CM*~MS*~OS*~OB	0.78	0.47	Yes	No
~CM*~MS*~IT*~OS*~OB	0.88	0.47	Yes	No
~PM*~CM*~IT*~OS*~OB	0.88	0.47	Yes	No
~PM*~MS*~OS*~OB	0.82	0.60	Yes	Yes
~CM*~MS*~IT*~OB	0.88	0.47	Yes	No
~PM*~MS*~IT*~OB	0.90	0.60	Yes	Yes
~PM*~MS*~IT*~OS	0.90	0.60	Yes	Yes
~CM*~MS*~OS*~OB	0.78	0.47	Yes	No
~CM*~MS*~IT*~OS	0.88	0.47	Yes	No
~PM*~CM*~OS*~OB	0.80	0.53	Yes	No
~PM*~CM*~IT*~OB	0.88	0.47	Yes	No
~PM*~CM*~IT*~OS	0.88	0.47	Yes	No
~PM*~IT*~OS*~OB	0.90	0.60	Yes	Yes
~PM*~CM*~MS*~OB	0.78	0.47	Yes	No
~PM*~CM*~MS*~OS	0.78	0.47	Yes	No
~PM*~CM*~MS*~IT	0.88	0.47	Yes	No
~CM*~IT*~OS*~OB	0.88	0.47	Yes	No
~MS*~IT*~OS*~OB	0.90	0.60	Yes	Yes
~CM*~MS*~IT	0.88	0.47	Yes	No
~MS*~IT*~OB	0.90	0.60	Yes	Yes
~CM*~MS*~OS	0.78	0.47	Yes	No
~CM*~MS*~OB	0.78	0.47	Yes	No
~MS*~IT*~OS	0.82	0.60	Yes	Yes
~CM*~IT*~OS	0.88	0.47	Yes	No

Conjunctural/Causal Conditions	Consistency	Coverage	0.75 Consistency Benchmark is Met	Veristic Threshold (3 Cases) is Met
~CM*~IT*~OB	0.88	0.47	Yes	No
~CM*~OS*~OB	0.80	0.53	Yes	No
~IT*~OS*~OB	0.91	0.67	Yes	Yes
~PM*~CM*~MS	0.78	0.47	Yes	No
~PM*~CM*~IT	0.88	0.47	Yes	No
~PM*~CM*~OS	0.80	0.53	Yes	No
~PM*~CM*~OB	0.80	0.53	Yes	No
~PM*~MS*~IT	0.90	0.60	Yes	Yes
~PM*~MS*~OS	0.82	0.60	Yes	Yes
~PM*~MS*~OB	0.82	0.60	Yes	Yes
~PM*~IT*~OS	0.90	0.60	Yes	Yes
~PM*~IT*~OB	0.90	0.60	Yes	Yes
~MS*~OS*~OB	0.82	0.60	Yes	Yes
~PM*~OS*~OB	0.83	0.67	Yes	Yes
~MS*~OB	0.75	0.60	Yes	Yes
~IT*~OB	0.92	0.73	Yes	Yes
~MS*~OS	0.75	0.60	Yes	Yes
~IT*~OS	0.83	0.67	Yes	Yes
~MS*~IT	0.75	0.60	Yes	Yes
~CM*~OB	0.80	0.53	Yes	No
~CM*~OS	0.80	0.53	Yes	No
~CM*~IT	0.88	0.47	Yes	No
~CM*~MS	0.78	0.47	Yes	No
~OS*~OB	0.85	0.73	Yes	Yes
~PM*~OB	0.83	0.67	Yes	Yes
~PM*~OS	0.83	0.67	Yes	Yes
~PM*~IT	0.90	0.60	Yes	Yes
~PM*~MS	0.82	0.60	Yes	Yes
~PM*~CM	0.80	0.53	Yes	No
~OS	0.80	0.80	Yes	Yes
~OB	0.80	0.80	Yes	Yes
~IT	0.79	0.73	Yes	Yes
~MS	0.64	0.60	No	N/A
~CM	0.80	0.53	Yes	No
~PM	0.83	0.67	Yes	Yes

Referring to Table 4.13, one notices that all barring one causal condition meets the consistency benchmark of 0.75. This posed a problem as there were now too many conjunctural/causal conditions that needed to be investigated. Ragin, 2008, suggests that one should use the property of strength associated with the

consistency measure in order to limit the number of solution terms. This approach is supported by Schneider and Wagemann, 2007. It involves raising the benchmark of the consistency value in search of a stronger set of relationships. The consistency benchmark for the negated fsQCA matrix analysis output was then moved to 0.85. It was not moved any higher, and the reason will become apparent in the next paragraph. The final solution terms for the negated fsQCA matrix appear in Table 4.14.

Table 4.14: Conjunctural / Causal Conditions Based on 0.85 Consistency Value

Conjunctural/Causal Conditions	Consistency	Coverage	0.85 Consistency Benchmark is Met	Veristic Threshold (3 Cases) is Met
~PM*~MS*~IT*~OS*~OB	0.90	0.60	Yes	Yes
~PM*~MS*~IT*~OB	0.90	0.60	Yes	Yes
~PM*~MS*~IT*~OS	0.90	0.60	Yes	Yes
~PM*~IT*~OS*~OB	0.90	0.60	Yes	Yes
~MS*~IT*~OS*~OB	0.90	0.60	Yes	Yes
~MS*~IT*~OB	0.90	0.60	Yes	Yes
~IT*~OS*~OB	0.91	0.67	Yes	Yes
~PM*~MS*~IT	0.90	0.60	Yes	Yes
~PM*~IT*~OS	0.90	0.60	Yes	Yes
~PM*~IT*~OB	0.90	0.60	Yes	Yes
~IT*~OB	0.92	0.73	Yes	Yes
~OS*~OB	0.85	0.73	Yes	Yes
~PM*~IT	0.90	0.60	Yes	Yes

Going back to our original solution terms appearing in Table 4.10, the analysis on the fully negated fsQCA matrix was initiated to substantively verify the solution terms as well as strengthen any claims made on the categorised successful BPR project influential factors. This was accomplished by proving the symmetry of the conjunctural causal conditions and by using the coverage scores of the negated fsQCA matrix solution terms to highlight the importance of one solution term over another, as the original solution terms all had the same coverage scores. In order to conclude the fsQCA analysis, reference will be made to the combined solution terms, which are integrated with the symmetry analysis. Table 4.15 represents the aforementioned statement.

Table 4.15: Combined Conjunctural / Causal Conditions Symmetrical Analysis

Combined Conjunctural Causal Conditions	Coverage	Symmetrical
PM*CM*OS*OB	0.60	No
CM*OS*OB	0.60	No
PM*OS*OB	0.60	No
OS*OB	0.60	Yes
~PM*~MS*~IT*~OS*~OB	0.60	No

Combined Conjunctural Causal Conditions	Coverage	Symmetrical
~PM*~MS*~IT*~OB	0.60	No
~PM*~MS*~IT*~OS	0.60	No
~PM*~IT*~OS*~OB	0.60	No
~MS*~IT*~OS*~OB	0.60	No
~MS*~IT*~OB	0.60	No
~IT*~OS*~OB	0.67	No
~PM*~MS*~IT	0.60	No
~PM*~IT*~OS	0.60	No
~PM*~IT*~OB	0.60	No
~IT*~OB	0.73	No
~OS*~OB	0.73	Yes
~PM*~IT	0.60	No

Initially, based on the original fsQCA matrix, four solution terms were derived, of which only the intermediate solution term was based on substantive knowledge. The other three solution terms were derived using the sufficiency analysis approach as part of the fsQCA tool. Referencing Table 4.15, one notices that only one solution term is symmetrical in nature based on the sufficiency analysis on both the negated and non-negated fsQCA matrix. We also notice that the solution term that is symmetrical in nature has the highest coverage value of 0.73, indicating higher relevance or importance of the solution term over all other solution terms. This information then leads us to claim the following:

Based on OS*OB → SO and ~OS*~OB → ~SO we can conclude by claiming that BPR projects that exhibit organisational structure and organisational behaviour BPR successful project influential factors are most likely to succeed. The reverse is also true where BPR projects that do not exhibit organisational structure and organisational behaviour, BPR successful project influential factors are most likely to fail.

If we were to make claims by using our intermediate solution derived by analysing the original fsQCA matrix, it leads us to claim:

Based on PM*CM*OS*OB → SO we can conclude by claiming that BPR projects that exhibit organisational structure, organisational behaviour, project management and change management BPR successful project influential factors are likely (not most likely) to succeed. The reverse, however, cannot be concluded as empirical evidence analysed via the fsQCA approach does not support the reverse claim.

The above conclusions, based on the analysis, do not end there, as the most influential factors compared to their counterparts still need to be determined, based on the final solution terms. Ragin, 2008, offers a solution to determine the above. He suggests that the most parsimonious solution is included in all intermediate solutions (which pass the frequency threshold) and should be considered the core causal conditions. He also suggests that the additional conditions appearing in the intermediate solutions are “contributing” or “complementary” conditions. If one were to follow the logic of Ragin, 2008, we would then assume that the additional conditions existing in the most complex solutions are also contributing conditions, however, they are of lower importance than the intermediate solution term

conditions. Table 4.16 summarises the outcome of the importance of the contributing causal conditions to a successful BPR project.

Table 4.16: Relative Importance of Causal Conditions

Causal Condition	Relative Importance	Solution Term Presence
OS	Core Condition of high Importance	• Complex Solution Term • Intermediate Solution Term • Parsimonious Solution Term
OB	Core Condition of high Importance	• Complex Solution Term • Intermediate Solution Term • Parsimonious Solution Term
PM	Complementary Condition of medium importance	• Complex Solution Term • Intermediate Solution Term
CM	Complementary Condition of medium importance	• Complex Solution Term • Intermediate Solution Term
IT	Complementary Condition of low importance	• Complex Solution Term
MS	Complementary Condition of low importance	• Complex Solution Term

The relative importance above is derived by using the logic suggested by Ragin, 2008, however, there is a way to validate if this would hold true if further QCA techniques were to be applied. The specific technique that could be applied to validate the outcome is based on calculating the "Set Coincidence" values for the individual causal conditions and the outcome. Set coincidence is described as being a special type of correlation (Ragin, 2008), and is a measure of degree to which two or more sets overlap (Ragin, 2008). For fsQCA it is calculated according to the formulae below: (Note: the fsQCA tool is used to derive the values)

$$\sum[\min(X_i,Y_i)]/\sum[\max(X_i,Y_i)] \text{ (Ragin, 2008)}$$

Only two types of sets will be measured for set coincidence, namely; condition X is a subset of outcome Y or condition X is superset of Y, notationally represented below.

$$X \rightarrow Y \text{ and } X \leftarrow Y \text{ (X implies Y or Y implies X)}$$

This will determine the strength of the presence of the condition implying the existence of the outcome. Figure 4.6 highlights the values of the set coincidence analysis for all the conditions (PM, CM, MS, IT, OS and OB) in the context of the outcome (SO).

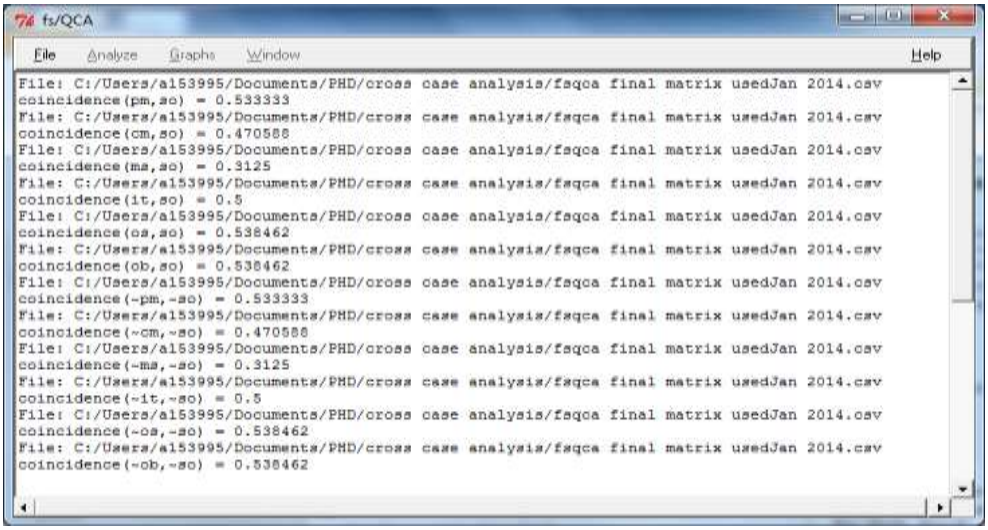


Figure 4.6: Output of Set Coincidence Analysis

To reiterate, in a more usable format, the values appended to Table 4.16 revealed Table 4.17:

Table 4.17: Analysis Outcome of Relative Importance Appended with Set Coincidence Scores

Causal Condition	Relative Importance	Solution Term Presence	Set Coincidence Value (rounded to two decimals)
OS	Core Condition of high Importance	• Complex Solution Term • Intermediate Solution Term • Parsimonious Solution Term	0.54
OB	Core Condition of high Importance	• Complex Solution Term • Intermediate Solution Term • Parsimonious Solution Term	0.54
PM	Complementary Condition of medium importance	• Complex Solution Term • Intermediate Solution Term	0.53
CM	Complementary Condition of medium importance	• Complex Solution Term • Intermediate Solution Term	0.47
IT	Complementary Condition of low importance	• Complex Solution Term	0.5
MS	Complementary Condition of low importance	• Complex Solution Term	0.31

Based on the set coincidence scores, one contradictory claim exists. CM was claimed to be of higher importance than IT based on the approach suggested by Ragin, 2008, however, using the set coincidence scores, IT can be claimed as a causal condition of higher importance than CM, as it has a set coincidence score of 0.5 compared to 0.47 for CM. For the purposes of the research and the development of the methodology, the researcher chose to ignore this contradiction as the individual causal conditions are not sufficient by themselves to imply the outcome. It is only by virtue of their conjunctural nature that they become sufficient for the outcome. This is why Ragin's, 2008, approach is sustained.

This now brings us to the end of the cross case analysis section, the outcomes of which will be used to develop new concepts that will aid in the development of the methodology (c/f Chapter 6).

4.10.2 Concept Development

Concept development, as mentioned in Chapter 3, will firstly determine if the inferences and claims made by the cross case analysis adds new knowledge to the BPR project influential factors phenomenon. If new concepts are proven, then these new concepts will be further elaborated upon.

In order to determine if the claims made by the cross case analysis are adding knowledge, they will be verified against the literature that was reviewed (b/f Section 2.2). In the conclusion of the cross case analysis, three claims were made. The two claims that were made, based on using the conjunctural causal conditions, were that "BPR projects that exhibit organisational structure and organisational behaviour BPR successful project influential factors are most likely to succeed," and "BPR projects that exhibit organisational structure, organisational behaviour, project management and change management BPR successful project influential factors are likely to succeed." The third claim focused on the relative importance of the successful BPR project influential factors.

One should remember that the factors represented in Table 2.1 were revised to refer to the positive context; namely, a successful BPR project influential factor. A comparison was thus made between these factors and the finalised categorised factors that were used for the cross case analysis. The results of the comparison, in terms of highlighting new factors identified, as part of the research presented in this thesis appears in bold script in Table 4.18.

Table 4.18: New versus Prior Researched Factors

Factor Category	BPR Project Success Factor	New Factor Identified
PM	BPR Philosophy between project and organisation is aligned	No
PM	Analysis of As-Is Processes was of good quality	No
PM	Design of To-Be Processes was of good quality	No
PM	Project outcomes is in alignment of Organisation Vision and Goals	No
PM	The project benefit calculations were realistic and undisputed	No
PM	Project had a defined team structure with strong engagement and cohesion	No

Factor Category	BPR Project Success Factor	New Factor Identified
PM	Project process design was customer centric	No
PM	Project was independently managed by an experienced Project Manager using an industry accepted project management methodology	No
PM	Project was prioritised according to organisation strategy and value outcomes	No
PM	Project standardised reengineered products inclusive of processes	No
PM	Project had an undisputed compelling Business Case for change	No
PM	Project used a proven Process Improvement Methodology	No
PM	Project had an approved **S**cope **o**f **W**ork (SOW) which was stable and or managed according to proper change control processes	No
PM	Project benefit expectations were undisputed and measurable	No
PM	Project implementation timeframe was realistic and planned for based on approved scope.	No
CM	Project deliverables and outcomes aligned human resource policies within the organisation	No
CM	No resistance to changes being introduced by the project	No
CM	Project has detailed Stakeholder Mapping and Engagement Plan in place	No
CM	Project had an excellent communication strategy and executed accordingly	No
CM	Project identified and trained all impacted stakeholders	No
CM	Project deliverables and outcomes motivated all impacted stakeholders	No
CM	Project had a detailed change management strategy and executed accordingly	No
MS	Executive sponsorship existed and Executive Sponsor actively participated	No
MS	Line management ownership of project delivery was prevalent	No
MS	Management recognised and provided support for Risk Management	No
IT	Project team had strong IT awareness and IT understanding when considering Business Process Integration into the IT system landscape	No
IT	There is adequate alignment between IT and BPR Strategy	No
IT	Organisation had stable, standardised tools for business process analysis and design	No

Factor Category	BPR Project Success Factor	New Factor Identified
OS	Organisation has a formal **B**usiness **P**rocess **M**anagement (BPM) structure in place	No
OS	Organisation had a management structure that supported Project Execution	No
OS	**Organisation Functions/ Operations Structure was stable during the execution of the project**	**Yes (Researcher Contribution)**
OS	**Single point of accountability and decision making was applied on the project (inherent within organisation management structures)**	**Yes (Researcher Contribution)**
OS	**Executive Sponsor for the project remained stable**	**Yes (Researcher Contribution)**
OS	Organisation had a strong relationship with delivery partner/vendor	No
OB	Organisation is eager to invest in large BPR type projects	No
OB	Organisation has a Continuous Improvement Philosophy that aligns with the Organisation Strategy	No
OB	Selected Business Process Reengineering approach was aligned to organisation's acceptance of change. (Radical or Incremental)	No
OB	Organisation/Business Politics did not influence decisions made on the project	No
OB	Organisation had a high change adoption rate	No

Table 4.18 revealed that prior research had previously determined the impact of good project management factors, change management factors, IT factors, management support factors, organisational behaviour factors and some factors related to organisational structure, however, it failed to reveal the new factors identified forming part of the category organisational structure. The new factors identified and claimed by the researcher relate to the fact that organisational structures do not always remain stable due to the immense pressures of constant and rapid market changes (Alas, et al., 2012). This in turn proves that the claims made by the research in terms of the categories of organisational structure hold true in terms of additional knowledge, as unstable management and functional organisational structures impact to BPR implementations were not covered by prior research.

Secondly, based on the summarised literature review, one also notices that prior research had placed very little emphasis on highlighting the relevance of the successful BPR project influential factors when compared with one another and tested against empirical evidence, especially organisational culture and structure factors (Nisar, et al., 2014) (Grau & Moormann, 2014). This means that the research has contributed to the understanding of the BPR project phenomenon in this context as well. Nisar et al., 2014, recommends further work be carried out in order to clearly understand the relationship between an organisation's structure and top management commitment to BPR. In addition, Grau and Moormann, 2014, suggest that there is a gap in understanding the relationship between organisational culture and BPR. The research presented in this thesis, by virtue of

empirical studies, indicates that organisational behaviour, inclusive of culture, and organisational structure do have a critical influence on the successful implementations of BPR.

So after having proved the addition of new knowledge to the BPR project phenomenon, the new factors identified were converted into a conceptual theoretical model. The model also incorporated existing factors related to the organisational context represented in the categories organisation behaviour and organisation structure. The researcher developed and termed this model the **O**rganisational **R**ing **o**f **I**nfluence (ORoI), depicted by Figure 4.7 (Abdul Kader (ORoI), 2013). The next few paragraphs will focus on describing the ORoI in further detail.

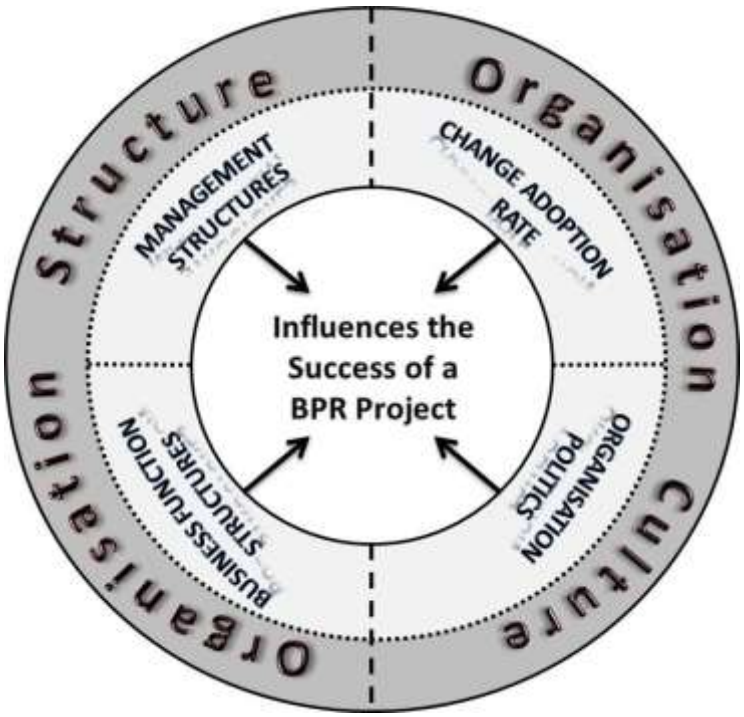


Figure 4.7: Organisation Ring of Influence (ORoI)

A principle to bear in mind is that the ORoI is not directed at the organisation in terms of its holistic success or failure but rather at the influence the organisational dynamics have on the projects that are being executed, be they negative or positive. Another principle to bear in mind is that these concepts are inherently based on the organisation and not on the project or project team, however, their influence and the understanding thereof is of utmost importance to the research presented in this thesis and is the focus of the descriptions of the ORoI components that follow.

Based on the analysis that was conducted on the BPR project influential factors the following four organisational components were found to have a major influence on the outcome of the projects that were studied (Abdul Kader (ORoI), 2013):

- The way the organisation management was structured.
- The stability of the organisation functional and or operational structures.
- The influence business politics had in project decision making.
- The capability of an organisation to adopt the business change at an acceptable rate.

These tier two components make up the tier one components of the ORoI, namely, organisational structure and organisational behaviour. The tier two component descriptions follow next.

Organisation/Business Politics, an element of Organisation Culture, is defined as "The pursuit of individual agendas and self interest in an organisation without regard to their effect on the organisation's efforts to achieve its goals" (Abdul Kader (ORoI), 2013). This type of behaviour is dominant within a matrix management structure as matrix management structures exhibit disadvantages, such as unclear responsibilities, poor governance and control, unclear lines of authority and decision making and potentials for high stress situations (Krell, 2011). The organisational politics exhibited by the Bank was basically due to the number of decision makers and stakeholders that were involved in determining the project components, such as scope and budget. This can be seen clearly by looking back at the individual project descriptive analysis. The project managers had a difficult time in obtaining an approved budget and scope for failed projects, while the reverse was true where there was a single decision maker on projects. From this it is easy to see how this behaviour, forming part of the organisation culture, can influence the outcome of a BPR project.

Change Adoption Rate is the second component making up the tier one component of Organisational Culture. This is not to be confused with the BPR project influential factor "Resistance to Change". This links to the factor that was suggested by Al-Mashari and Zairi, 1999, as they posit that an organisation's capability to absorb the demand for change can impact the successful delivery of a BPR effort. Resistance to change can be defined as "the deliberate and conscious decision of impacted stakeholders not to readily accept any organisation change" (Abdul Kader (ORoI), 2013). Change Adoption Rate, even though sometimes influenced by resistance to change, can be defined as "the ability of an organisation in terms of period taken before any change is implemented and standardised within the organisation" (Abdul Kader (ORoI), 2013). This phenomenon can be attributed to what the researcher terms as change fatigue (resources experiencing many changes at the same time will as a result be mentally and physically exhausted and prone to resist any form of change, beneficial or not), which was seen in the failed BPR projects that were analysed. The most important aspect that revealed itself in the descriptive analysis was the number of change initiatives and projects that was being run within the same department that overlapped each other in terms of business requirements and objectives. This meant that the same stakeholders were bombarded with multiple projects trying to achieve similar objectives which resulted in change fatigue. In principle the objectives of the projects were not being disputed however due to the number of stakeholder engagements by various projects, it took a lengthier period for the changes to be adopted. From this one could theoretically infer that an organisation is only able to absorb a limited number of changes in a specific period of time before change fatigue sets in.

Business Function Structure, an element of Organisation Structure, is based on two principles. The first principle is the value chain process philosophy (Abdul Kader (ORoI), 2013) where a process is holistically a representation of a function or organisation output based on certain inputs that span the organisation. Process value chains can start in the Product Design department and end in the Sales department, which results in multiple process owners, contrasting process understanding and disparate continuous improvement projects (Ackoff, 1995). This phenomenon can result in reengineering parts of a single value chain through different teams and different executive sponsors, without understanding the impact to the holistic nature of the value chain itself (Ackoff, 1995). All parts of a process, if isolated and reengineered, could result in the value chain being left worst off than it was before (Ackoff, 1995).The first principle, however, can only be theoretically

explained as described above. The second principle, which can be empirically explained as well, is based on the stability of the business unit departments/functional areas. As highlighted by the descriptive analysis of the BPR projects, it was noted empirically that a BPR project conducted within a fluid structure could fail. This was due to the fact that a change in structure also meant a change in key stakeholders, which in turn meant a change for the BPR project, especially centred on finalising scope and budget and sometimes even questioning the original value of the BPR project in its entirety. Business Function Structures also very intimately determine the other component of Organisation Structure, namely; Management Structures.

The Management Structures component of the ORoI is a difficult one to explain in isolation, as the type of selected management structure determines the extent to which business politics influences the BPR project's outcome. Management structures are also determined by how the organisation is functionally and divisionally structured. Mintzberg, 1980, highlights five types of organisational structures, namely; Simple Structure, Machine Bureaucracy, Professional Bureaucracy, Divisionalised Form and Adhocracy. A summary of Mintzberg's, 1980, organisational structure types was previously published by the researcher based on the context of the research presented in this thesis. An extract of the article appears below:

"In the Simple Structure format, also known as Entrepreneurial, there exists a strong vertical line of authority and decision making. No formal structures exist for performance of work and or support functions.

Machine Bureaucracy has very formal structures wherein lines of authority are functionally based. Decisions and work performed are also governed by these functional groups in their respective functional spaces namely; Sales, Product, Marketing etc.

Professional Bureaucracy is different to Machine Bureaucracy in that the decision making power for the functional lines of authority are distributed across the vertical lines due to the use of professionally skilled individuals and standardised work execution approaches. Machine and Professional Bureaucracy organisations are similar in nature to the commonly known Functional type organisation.

The Divisionalised Form, similar to the Divisional type organisation, exists in large organisations wherein many divisions are created across, product, geography and market domains to perform related work. Authority and reporting lines span across levels that are accountable for strategy and operations. This structure also leads to duplication of work if common areas such as Human Resources and Information Technology exist independently within the operational areas of the organisational divisions.

The Adhocracy type classified by Mintzberg is of particular interest, as is the Matrix type of organisation wherein aspects of Functional and Divisional are selected to create the organisation structure. The Adhocracy organisation type is an adaptive type of structure which is influenced by the changing internal and external environments as well as any changes in organisation strategy. A Project organisation structure is very similar in nature to Mintzberg's Adhocracy as no two projects are similar and structures are determined by the project objectives and execution environments," (Abdul Kader (Business Politics), 2013).

From the article extract above, one notices that the Matrix Management Structure is intimately linked to Mintzberg's, 1980, Adhocracy organisational structure, which is asserted as having a highly complex and dynamic environment. This complex and dynamic environment however was empirically analysed and found to have a

negative influence on BPR projects. This can be attributed to the fact that having multiple decision makers on a project creates multiple failure points especially when the decision makers have disparate visions and objectives for the same project (Abdul Kader (ORoI), 2013).

Having described in detail the ORoI components and their impact on executing BPR projects successfully, the focus will now be on summarising the analysis in the context of why one would recommend a new execution approach.

4.10.3 Case Study Analysis Conclusion

Stepping back, it was initially stated that the cross case analysis, the heart of the analysis, would be aimed at deriving the relevant priority of the BPR project influential factors in comparison with one another. This newly gained knowledge produced by the research presented in this thesis would then be used to derive a framework or methodology that would facilitate the prioritisation of these factors before a BPR project is executed, in other words facilitate an environment that supports the delivery of a successful BPR project. The objective of the cross case analysis was achieved, and Table 4.17: Analysis Outcome of Relative Importance Appended with Set Coincidence Scores, (b/f Section 4.9.1) outlines the outcomes.

To summarise, the research revealed that organisation structure and organisational behaviour BPR project influential factors are core contributing factors to the success of a BPR project, while project management, change management, IT and management support are complementary factors of varied relative importance. The research also highlighted new factors that were not revealed by prior research resulting in the development of the ORoI model that explains the impact of organisational structures and behaviours towards the execution of a successful BPR project. These claims support the advancement of knowledge related to gaps identified by Nisar et al., 2014 and Grau and Moormann, 2014.

Taking into account that previous research did not reveal the new factors and their impact on executing a successful BPR project and that the literature review revealed a gap in organisations having an understanding of their readiness to implement BPR initiatives (Hussain, et al., 2014), the researcher concluded that a recommendation in the form of a methodology would be required in order to facilitate setting up an environment that would be conducive to executing successful BPR projects. The researcher's conclusion is supported by recommendations for further work made by Hussain et al.,2014 (b/f Section 2.2.2). This will be the focus of Chapter 6. However, before we embark on the recommended methodology the researcher had a look at the world of Systems Science and principally its associated Soft Systems Methodology.

Before one moves on to explore the world of systems science and the soft systems methodology, which follows next, let us conclude by answering the ensuing question. Why Systems Science and Soft Systems Methodology? The research presented in this thesis revealed that projects were executed within an operating environment as established by the organisation in which the project was executed. This led to the organisation influencing the outcome of a project, be it positive or negative; therefore, in aiming to reduce the failure of BPR projects by improving how we execute BPR projects, consideration should be given to certain key principles that exist within an organisation as part of the entire "BPR Project System" (Abdul Kader (ORoI), 2013), which constitutes the BPR project execution environment and the actual BPR project itself. The Soft Systems Methodology, which is rooted in Systems Theory, looks at a "system" and all its subsystems or components in order to create a holistic understanding of a context (Flood & Carson, 1993).

5 Leveraging Soft Systems Methodology

5.1 Introduction

Leading on from the previous chapter and before one elaborates on what **S**oft **S**ystems **M**ethodology (SSM) is and how it can be used to help create a framework or management approach that would facilitate the success rate of executing BPR projects within the financial industry, one should first create an understanding on why **S**ystems **T**heory (ST), and more specifically SSM, can help in achieving this.

The researcher would like to posit the following concept: a BPR project is not just a project but a system and one can call this the "BPR Project System" (Abdul Kader (ORoI), 2013), depicted by Figure 5.1. This system is made up of two subsystems, the organisation environment in which the project is executed and the BPR project itself. The reason for depicting the BPR project system in this manner is due to the nature of the relationships between an organisation's environment and the BPR project. The organisation environment can exist without the BPR project and the BPR project can exist in a different organisation environment, however, the BPR Project System requires both to exist and interact with each other in order to result in a certain type of behaviour or in this case result in a successful or failed BPR project. In keeping with the above concept Meadows, 2008 calls this the central insight of systems theory and summarises it as follows:

"Once we see the relationship between structure and behaviour, we can begin to understand how systems work, what makes them produce poor results and how to shift them into better behaviour patterns." (Meadows, 2008)

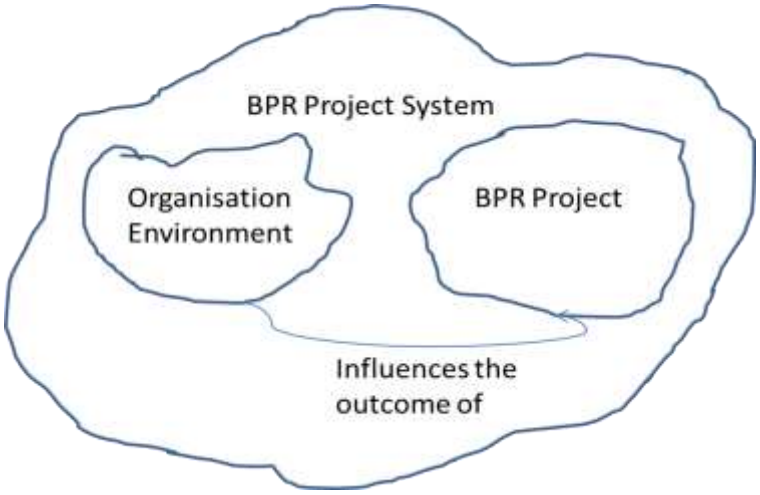


Figure 5.1: Systems Diagram of a BPR Project System

Furthermore, a system is defined as being an interconnection of a set of elements that are coherently organised in a way that achieves something (Meadows, 2008). This means that if one takes the BPR project system, one can assume that elements from the organisation and BPR project are interconnected and should be set up in a way that influences the achievement of the project's goals, which inherently would mean that the project will be successful.

The additional link of ST to the research is the concept of dominance within feedback loops (a mechanism that allows for change based on the input or output signals against a condition that is acted upon (Meadows, 2008)). Remember that the researcher posited that BPR project influential factors influence project

outcomes in varying degrees and that a balance has to be created based on the understanding of this variance. In other words, the most dominant factor will influence the outcome of a project and if the factor is negative in its nature it will most likely result in a failed project.

Full or partial use of SSM as it relates to project management and the pursuit of successful projects is not new and further links of SSM usage towards executing successful projects can be found in prior research.

Sankaran et al., 2010, state that project management is very closely linked to system approaches and provide a view on systems thinking tools, such as causal loops, system archetypes and SSM (Sankaran, et al., 2010). In particular, they provide a view on how these tools are used in a project management situation. They go on to further state that project management has moved beyond the product or technology centric approaches towards people and process centric approaches in response to the changing and increasing complexity of organisational change. In addition, they posit that SSM can be used early on in a project life cycle to assist stakeholders to clarify the benefits and the purpose of the projects being executed. However, they do not provide a view on how SSM can be applied to achieve this, but do suggest that project managers engage in using these methods as part of project management practice.

Bell and Christina, 2006, explored the application of SSM in the planning of complex projects in the United Kingdom healthcare sector and went on to suggest that SSM had many strengths, one of which was the ability to use SSM as a “front end” to more formal project management methods in aiding project planning (Bell & Christina, 2006). They also explored the use of the Logical Framework Approach as a means of documenting the outcomes of the application of SSM. The Logical Framework Approach is applied through the development of a four-by-four matrix, which encompasses the story of the project or purpose, the main assumptions or risks and the measures of success. Referencing the purpose of the research presented in this thesis, a similar approach is adopted whereby SSM is adapted for use within the practice of executing BPR projects in the financial sector by using the outcomes of the case study as a means to guide the appropriate mitigation of barriers or risks on pending projects.

Walker and Steinfort, 2013, adapted the use of SSM rich pictures in order to improve the practice of programme and project management as it relates to executing disaster relief projects, by including colour coding in the development of SSM’s rich pictures (Walker & Steinfort, 2013). They suggested that SSM was a tool that could help the understanding of a project’s context prior to its planning by “visualising messy complex problems”. The problem they sought an answer for was that of effective project planning in complex situations through creating a visual understanding of a situational context. They critically suggested that the Logical Framework Approach needed to be improved from its text based approach and put forward the application of the adapted SSM rich picture approach.

Further research into the application of SSM to project management is advocated for by Turney et al., 2013, when they investigated many schools of thought related to project management research. The behavioural school of thought looks at a project as being a temporary social system which includes focus areas such as organisational behaviour and human resource management (Turney, et al., 2013). Turney et al., 2013, in concluding their work, suggest several areas of further research, one of them being the:

> “Integration of hard systems and soft systems methodologies for modelling the total project management system, including optimization of multiple objectives under multiple constraints, consideration of various forces in the internal and

external project environments, as well as formulation and adoption of lessons learned from previous and ongoing projects to enhance the total system and the approaches used for modelling it." (Turney, et al., 2013)

The managerial implication presented in the next chapter intends to advance some aspects of the above recommended area of further research and also aligns with the recommendation of Watson, 2012, to explore new avenues of SSM application in order to resolve complex or problem situations, such as structural and process changes. A notable gap in the research literature reviewed above is that the influential factors associated with successful or failed projects were not considered as part of the SSM application. The managerial implication presented in the next chapter will also endeavour to close this gap.

In Sections 5.2 and 5.3 the researcher gives an overview of the work by Donella Meadows and Peter Checkland, as their work was used to inform the development of the managerial approach defined in Chapter 6.

5.2 System Leverage Points

The concept of a systems "Leverage Points" was introduced by Meadows, 2008. She introduces this concept and quotes Jay Forrester as saying:

"....the average manager can define the current problem very cogently, identify the systems structure that leads to the problem, and guess with great accuracy where to look for leverage points – places in the system where a small change could lead to a large shift in behaviour." (Meadows, 2008)

Meadows, 2008, considered these points as points of power. When considering the BPR project system, one will immediately draw from the above statements that if one wants to change the behaviour of this system in order to improve the success rate of such a system, an understanding of the key leverage points has to be in place in order to effect changes that would lead to change in the BPR project system behaviour. If one looks back at the case study analysis, the concept of the ORoI and the project influential matrix derived in terms of their criticality of influence on project outcome, it can be affirmed that the research has subscribed to this concept and has determined what the most influential leverage points of the BPR project system are.

The findings of the research are further supported by Meadows, 2008, findings in terms of the most influential or most impactful system leverage points. She suggested the following system leverage points in order of influence or impact:

1. Transcending Paradigms – This is a philosophical leverage point and is centred on the understanding that there are many paradigms or worldviews or differences in ideas and or opinions and sometimes there is no right or wrong answer but simply an answer that if chosen will help fulfil a desired purpose. (Meadows, 2008)

2. Paradigms – This leverage point has a more practical description and revolves around what one knows of the world or system one is in, based on thoughts that have been created by one's own experiences and prejudices (Meadows, 2008). It is considered the hardest leverage point, yet the one that could have the most impact (Meadows, 2008). Referencing the case study analysis in terms of resistance to change, change adoption rates and business politics, all of which are based on what individuals perceive their involvement in the system to be. Donella Meadows, 2008, suggested that if these paradigms were to change, the behaviour of the system would change as well.

3. Goals – The purpose or function of the system. This leverage point is aimed at creating an understanding of what the systems goal is or even ensuring the system goal is the correct goal in itself (Meadows, 2008). Every facet of a system will drive towards the systems goal and hence it is important for the goal of a system to be not only clear but also correct (Meadows, 2008). With reference to a BPR project, a BPR project has a goal or a set of goals and a number of objectives for which its success will determine its achievement of the attached goals and objectives. If these are not clearly defined and understood within the BPR project system, the completion of a project will not necessarily lead to a successful endeavour and the lack of understanding could lead to multiple paradigms, which will then lead us to the paradigm leverage point described above. A systems thinking concept as it relates to goal definition is the "PQR" concept (Checkland, 1999). A project's goals and objectives should at minimum cover the "P" or "what", the "Q" or "how" and the "R" or the "why" of the project (Checkland, 1999). In other words, "we want to achieve P by doing Q because of R". It is a simple yet effective means of describing a projects "what", it's "how" and the reasoning thereof or "why".

4. Self-Organisation – This leverage point is, as the words suggest, about changing the systems structure, thereby leading to changes in behaviour of the relevant system (Meadows, 2008). Referencing the case study, a matrix management structure, for example, can lead to higher business politics than say a more project management organisational oriented structure.

5. Rules – This leverage point is also self-explanatory and it is directed towards changing the systems behaviour by changing what rules are imposed on it and by it (Meadows, 2008). A BPR project system is no different to any other system and has to abide by the rules of the organisation, in terms of its HR policies and project governance requirements as examples. It is also a tricky leverage point as any rule changes will result in varied behaviour (Meadows, 2008).

6. Information Flows (Meadows, 2008) – This leverage point links to communication as it relates to a BPR project system. Take into account the factors of a BPR project in terms of internal and external stakeholder communication and tools for communication. Communication or information flow is a means to generate feedback, which in turn is a means to anticipate and proactively deal with issues, risks and concerns.

7. Reinforcing Feedback Loops – This leverage point comes from the system thinking "Feedback Loop" concept and suggests that system behaviour will continue in a single direction as long as it receives feedback that reinforces that directional behavioural outcome (Meadows, 2008). Meadows, 2008, suggest that a system with an unchecked reinforcing feedback loop will ultimately destroy itself. Referencing the case study in terms of business politics and resistance to change, if left alone and unmanaged, the BPR project system will most likely exhibit negative behaviour and result in a negative outcome.

8. Balancing Feedback Loops – This leverage point has also emerged from the systems thinking "Feedback Loop" concept and is about correcting or adjusting system behaviour towards a goal (Meadows, 2008). It is about controls and processes that once in place will continue to provide a mechanism that will monitor system goal deviations and correct such deviations so that the system will remain steadfast in maintaining its

behaviour towards achieving its goals. Reporting refers to the above when it comes to the BPR project system.

9. Delays – This leverage point is focused on timely responses towards information as well as timely distribution of information (Meadows, 2008). A system cannot respond to short term changes in the face of long term delays (Meadows, 2008). Think about the change adoption rate as mentioned as part of the ORoI.

10. Stock and Flow Structures – As one comes towards the end of the leverage points, one realises that the systems structure and attributes yield the least impact towards changing its behaviour (Meadows, 2008). This leverage point can be thought of in terms of BPR project team structures, BPR project methodologies and tools. These, if changed as part of the physical aspects of a BPR project system, will yield very little impact (Meadows, 2008). It is better to understand what the limitations and bottlenecks are, in order to use these physical aspects with maximum efficiency (Meadows, 2008).

11. Buffers – This leverage point is about system stabilisation (Meadows, 2008). Too little buffer or too much buffer will create unintended consequences (Meadows, 2008). A BPR project system is faced with many buffering opportunities and threats when it comes to its budget, its delivery timelines and other resource allocations. These are also sometimes very difficult to change and are constrained by the capacity of the organisation to supply buffered resources.

12. Numbers – This is the least impactful system leverage point (Meadows, 2008). Changing the budget and timelines of a BPR project will not be successful if there is no buy-in for the project and its anticipated changes. However, these can be changed and sometimes they are given too much focus, but, similar to the buffers, numbers are also constrained and do not yield much system behaviour change (Meadows, 2008).

In addition to the work of Donella Meadows, 2008, the work of Peter Checkland,1999, takes into account 30 years of his practical work using and advancing SSM. The SSM is also recognised as the best documented soft systems theory school of thought in addressing the resolutions of problems (Flood & Carson, 1993).

SSM will be explored next against the backdrop of the book Systems Thinking, Systems Practice authored by Peter Checkland, 1999.

5.3 Soft Systems Methodology Concepts and Activities

This section will firstly look at the difference between the **H**ard **S**ystems **M**ethodology (HSM) and the SSM. This will further embed the reasoning as to why SSM was selected. This will be followed by a deeper look into the concepts of SSM and its application, which in turn will guide the development of the BPR management approach towards improving the rate of successful BPR projects.

5.3.1 Conceptual Modelling

Let us begin this section by first defining what is meant by conceptual modelling. The reason for doing this is to break away from the SSM definition of conceptual modelling which looks at using verbs to create a model that defines and describes what is required from an action/activity perspective in order for the system to

perform in a manner that represents the particular worldview or root definition as described by the SSM model (c/f Section 5.3.3).

For the purposes of the research presented in this thesis, the above approach will be adapted to define a conceptual model will be defined as the model that would be created by using nouns to identify all the organisational elements that will be involved in the BPR Project System. The aim of this process is to create an understanding of "who" and "what" will be required to execute the proposed BPR project. The researcher adapted the SSM conceptual modelling activity by using nouns instead of verbs and created focus on "organisational elements required" versus "activities performed". Also, unlike the SSM, model the researcher used the conceptual modelling framework to create the organisational as-is state or real world state in terms of the "who" and "what" which will be used in further stages of the BPR management approach.

Further to the above, Checkland, 1999, defined a formal system which will be adapted and used in order to guide the identification of all the nouns.

The next section gives an overview of Hard Systems and Soft Systems.

5.3.2 Hard System Views versus Soft System Views

Flood and Carson, 1993, summarise the differences between Hard and Soft system views in their quest for solving problems. They start out by defining what a "problem" means to each view. The hard systems view relates to a problem being a "doubtful or difficult matter requiring a solution; something hard to understand or accomplish or deal with" (Flood & Carson, 1993), while a soft systems view is centred on defining a problem based on how different people perceive everyday world events or ideas (Flood & Carson, 1993).

The difference in problem definition above leads to a difference in approach towards problem resolution. The hard systems view adopts problem solving as "being a definable problem that can be solved and finished with" (Flood & Carson, 1993), while the soft systems view is more related towards understanding problematic situations and reducing the dis-ease felt by those who are impacted by the problematic situation (Flood & Carson, 1993). It is also a process of management (Flood & Carson, 1993). Hard system methodologies basically set out steps to realise an efficient means and a predefined end and comes in the form of Systems Analysis and Systems Engineering, while soft system methodologies are more tailored towards dealing with "messy" or "complex organisational issues" involving "purposeful human activity" (Flood & Carson, 1993)

If it is taken into account that, what is being sought is a management process that can be applied to realising BPR project successes in a real world context with an understanding that this real world constantly changes, it is easy then to relate and integrate with the soft systems view. As mentioned previously, SSM is probably the best documented methodology when it comes to soft system views and as such is the focus of the next section.

5.3.3 Soft Systems Methodology

This section is a summative view of Peter Checkland's, 1999, SSM, highlighting concepts and methodology activities that can be transposed or adapted towards developing a proposed management approach that could improve the success rates of BPR projects.

SSM is a systemic process of inquiry that caters for the creation of a conceptual understanding of the real world and its perceived problem, which then leads to

proposed activities that are debated in order to make a recommendation on the activities that will be implemented or “actioned to improve” the perceived real world problem (Checkland, 1999). This sentence is quite a mouthful and yet it is still a very simple summary or view on what SSM is about. Figure 5.2 is a pictorial view as depicted in Systems Thinking, Systems Practice (Checkland, 1999).

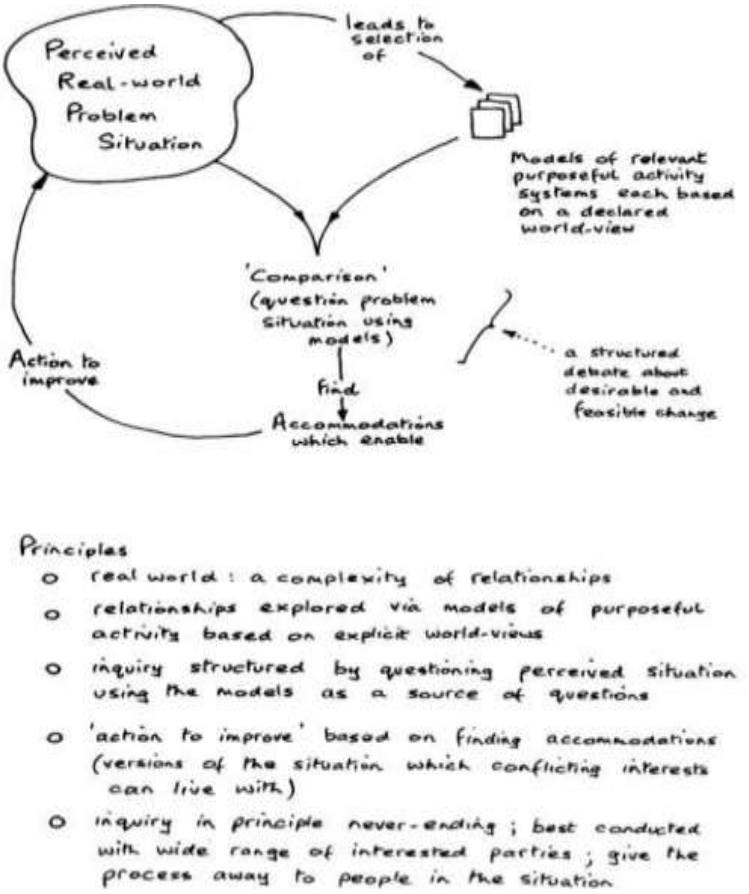


Figure 5.2: SSM Inquiry (Source: Systems Thinking Systems Practice, Checkland, 1999)

The SSM model is actually made up of seven stages. Figure 5.3 illustrates the seven stages of the SSM model (Checkland, 1999). The next paragraphs will summarise what each stage entails, however, the focus will be on highlighting specific concepts and or techniques that are used as part of Stages 3 and 4, which are the systems thinking stages. It is also important to note that Stages 1, 2, 5, 6 and 7 are not systems thinking based and represent the real world activities that are performed by the people involved in the problem situation (Checkland, 1999). Stages 3, 4, 4a and 4b are systems thinking based and involve the use of systems language and systems thinking with its associated techniques (Checkland, 1999). This should be noted as an important distinction between the systems world and the real world in terms of the SSM model definition as it highlights the fact that the systems thinking aspects can be interrelated with non-systems thinking aspects as part of a formal methodology. The interest within the research is directed towards the systems thinking stages, as the systems thinking techniques used are what will be explored for use and or adaptation. The stages are also important in highlighting how the real world can fit together with the systems thinking world which in turn will guide the development of the research objective, a BPR management approach. The next paragraphs will look at the description of the SSM stages as it relates to the context mentioned above.

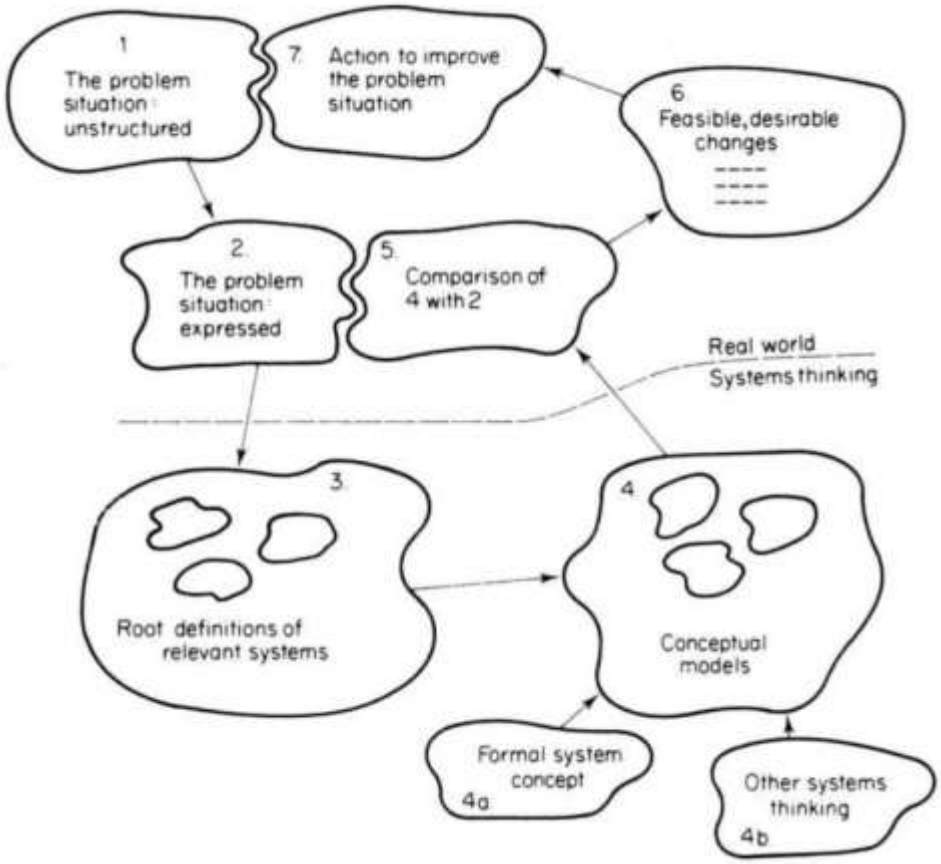


Figure 5.3: SSM (Source: Systems Thinking Systems Practice, Checkland 1999)

Stages 1 and 2 of the SSM are all about creating an expression or view of the situation in which the problem is perceived (Checkland, 1999). It is not about the problem itself. These stages are a means of creating rich pictures or a rich picture of the problem situation (Checkland, 1999). The outputs of these stages relay a visual display about the structures, processes and their relationships that exist within a specific context (Checkland, 1999).

Stage 3 of the SSM methodology is the start for systems thinking. In this stage, the possible system or systems that are at work in the problem situation are identified and their purposes are described (Checkland, 1999). These purposes are termed “root definitions” (Checkland, 1999). The root definition or definitions, as part of the SSM methodology, are critical to developing the conceptual models as carried out in Stage 4 (Checkland, 1999). The root definitions are meant to describe the ‘what” of the system and not the “how” (Checkland, 1999). It depicts the view of the world that makes the situation meaningful (Flood & Carson, 1993). Stage 3 is iterative in the sense that the root definition evolves over the duration of the rest of the SSM stages within the model. In order to test the root definition, the “CATWOE” model can be used to ensure that the root definition formulated is concise, practical and systemically correct so that it could form a solid basis for the Stage 4 conceptual model development (Checkland, 1999).

CATWOE is a mnemonic used to describe the followinh (Flood & Carson, 1993):

- "C" stands for "Customer" – It is an individual or groups or organisational roles and functional departments that will either benefit positively or negatively by this system, in other words, the impacted "beneficiaries or victims" of the system.
- "A" stands for "Actors" – These are individuals who will be performing activities within the system.
- "T" stands for "Transformation" – This term is to ensure that there is due diligence paid for creating an understanding of what inputs will be transformed and then output as it enters and exits the system
- "W" stand for "Weltanschauung" – This is the view of the world that makes the system meaningful and is represented by the "root definition" itself.
- "O" stands for "Owner" – Who can disrupt or abolish the system.
- "E" stands for "Environmental Constraints" – What in the systems environment would be considered unchangeable and given.

Asking questions that relate to the above descriptions in terms of CATWOE will strengthen and clarify the original root definition and will be updated if required (Checkland, 1999).

The concept of root definitions as well as the testing and refinement thereof using the CATWOE model is of interest to the research going forward into the development of the BPR management approach. Still assuming that one has a BPR Project System, this system's purpose is to successfully deliver its scope, inclusive of the project's goals and objectives within a specific time, quality and budget that will benefit the organisation and its beneficiaries in a certain way. The input into this system is its current state of operating, which will be "transformed" to its future state. Furthermore, Meadows, 2008, mentioned as part of her system's leverage points, the goal or purpose of a system is quite high in terms of influencing its behaviour and a clearly defined purpose or goal will help direct the system in terms of shifting towards the desired behaviour. This then leads us to the next systems thinking stage, Stage 4.

As mentioned previously, Stage 4 is dedicated to creating a conceptual model of the system based on the root definition, and nothing else, derived as part of the Stage 3 output (Checkland, 1999). The model's building language is simple and is based on only using verbs from the English language (Checkland, 1999). The model, when finalised, should contain a set of structured verbs that represent the minimum number of necessary activities required by the system represented by the root definition. Stage 4a is the application of the general model of any human activity system as posit by Checkland, 1999. Stage 4b is the "if required" step that is employed to convert the conceptual model to a more formalised model structure such as socio-technical systems or to represent the system dynamics (Checkland, 1999). The research interest lies in the general model of the human activity system because a BPR project system is representative of a human activity system as it relates to the research presented in this thesis.

Checkland, 1999, describes the following "formal system" (Source: Systems Thinking Systems Practice):

- A system as it pertains to soft systems has an ongoing mission or purpose. A hard system view however is more in line with the research as it pertains to projects and the time constraint. This then translates into a system having objectives and or goals.
- A system has a measure of performance in terms of progress towards achieving its goals.
- A system has a decision making process, a "decision maker" or a decision authority.

- A system has subsystems which in themselves exhibit all properties of a formal system.
- A system has components or subsystems that interact in order to influence one another or provide information.
- A system belongs to a larger system or environment in which it interacts,
- A system has a boundary which separates it from the larger system or environment. This can be formally defined in terms of decision making power that causes action or influencing power towards its environment
- A system has resources that are at the disposal of the decision-taking process.
- A system has some guarantee of continuity, stability and may be derived from internal or external to the system towards fulfilling the systems purpose, goal or objectives.

Checkland, 1999, proposes that the value add of the formal system model is that it enables questioning framed in a manner that when asked will reveal inadequacies in the conceptual model and the root definition that underlies it. Questions, such as "Is the performance measurement model explicit?" and "Are the system boundaries well defined?" (Checkland, 1999). This value add can be taken further to the point where the formal system model itself can be used to create a conceptual model by asking questions, such as "What are the boundaries of the system?" and "Who are the decision makers for the system?", will be explored in the next chapter (c/f Chapter 6).

Stage 5 takes us back to real world activities as opposed to systems thinking activities. This stage is concerned with comparing the output of stage 2 with stage 4 in an effort to create a debate about changes that can be introduced in order to alleviate any problem conditions (Checkland, 1999). This stage may also lead to improving the root definition and conceptual model (Checkland, 1999) which in turn once completed, will eventually lead to Stages 6 and 7 of the SSM model.

Stages 6 and 7 of the SSM model are where firstly feasible and desirable changes are recruited from the output of Stage 5 (Checkland, 1999). Checkland, 1999, proposes three types of changes that can be considered, namely, changes in structure, changes in procedure and changes in "attitudes". This proposal lends itself to the research in terms of classifying what changes from a systems thinking perspective can be considered in order to alleviate any problem situations that are perceived about the system. The last aspect within the SSM is that of implementing the feasible and desirable changes as part of Stage 7.

The above paragraphs focused on describing the SSM model in the context of the research. A summary of the concepts, covered by Section 5.2 and 5.3, is next.

5.4 Summary

Chapter 5 firstly linked the research with systems thinking by propounding the concept of a BPR Project System and aligning the research in this thesis to prior research conducted in the application off SSM towards improving the practice of project management. As stated previously further research is recommended on the application of SSM to further improve the practice of project management (Turney, et al., 2013). In addition, a notable gap in prior research on the application of SSM was that the project influential factors were not considered as part of the recommended approaches and applications. The points above allowed us to pursue the discussion of the concept of system leverage points (Meadows, 2008), which perfectly aligned itself to the research in terms of project influential factors and their priority in terms of criticality of influence on a BPR project's outcome.

The SSM model was further explored focusing on the following concepts and techniques within the systems thinking stages: the root definition concept as it aligns to projects goals and objectives, the CATWOE concept in its purpose of validating and strengthening the root definition; and the formal system model in validating the derived conceptual model.

These concepts and techniques will now be explored for usage and adaptation, as part of the BPR management approach derived, as part of the research presented in this thesis and described in the next chapter.

6 Managerial Implications: The Pre Project Organisational Environment Enablement Model (P^2OE^2M)

6.1 Introduction

This section is aimed at addressing what the case study and literature review revealed as gaps with respect to a management approach pre-project initiation or organisation readiness assessment (Hussain, et al., 2014). This management approach will facilitate the understanding of the organisational influence on the project being planned for, prior to its execution. The BPR management approach will also afford a means of identifying negative organisational influences and provide a few recommendations as to how to mitigate such influences. The mitigation suggestions are not meant to be exhaustive as this is not the purpose of the research presented in this thesis. The purpose of the research is the BPR management approach pre-project initiation; in other words, it is a framework and or guideline, to facilitate the thinking process as it pertains to executing a project within an organisational context.

The researcher has thus far reviewed prior research, which has led to the BPR project influential factors described in Table 2.1: Consolidated list of BPR Project Influential Factors Based on Prior Research. This table was further evolved as part of the case study work in to Table 4.2: Revised Project Influential Factors. As part of the research, the researcher also produced a conceptual model that facilitates the understanding of how an organisation's culture and behaviour could influence the outcome of an executed project. The model is the ORoI model (Abdul Kader (ORoI), 2013). Using the fsQCA technique the researcher was also able to identify the relative importance or impact variance associated with the categorised BPR project influential factors (b/f Section 3.6.1) and appears in Table 4.17: Analysis Outcome of Relative Importance Appended with Set Coincidence Scores.

In terms of the method development approach the CATWOE as well as the Soft Systems Model (b/f Chapter 5) have been discussed, in addition to aligning a BPR project in terms of its consideration as part of a super-system, which was called the BPR Project System. This alignment led to an understanding of the priority or influence of certain "leverage points" as defined by Meadows, 2008.

The above information as contained and described in the relevant sections, now moves the researcher forward into fulfilling the purpose of the research. The researcher will, in this section, cover the model derivation as it pertains to the concepts adopted and adapted for use as part of the proposed BPR management approach in terms of executing projects. This will then lead to an overview of the approach itself as well as a detailed description of the phases and steps that exist within the proposed BPR management approach.

6.2 Systems Concepts Adoption and Adaptation

As discussed in Chapter 5, ST was reviewed as a consideration for being used and adapted in the generation of the BPR management approach. This section describes how these concepts will be adapted and used in the context of the proposed BPR management approach described in the next section.

6.2.1 Project Goals and Objectives

The first concept to be adapted for use is that of the SSM Root Definition. As mentioned previously, a root definition (b/f Chapter 5) clarifies the purpose of a system based on a specific world view. Depending on alternate world views one might have variances in root definitions for a single system. For the purposes of the research the focus will be on the BPR Project System and the world view of executing a successful BPR project within its specific execution environment.

As has been mentioned earlier, in order to successfully execute a BPR project one will have to successfully deliver on the scope of the project within time, quality and budget and meet the expectations in terms of the benefits that the organisation will incur. The scope of a project can be abstracted to the definition of the project goal and its associated objectives. It is worthwhile mentioning at this point that Meadows, 2008, suggested that a clear understanding of a system's goal influences the outcome that would meet such an intended goal, and that in terms of the systems leverage points, this was ranked as number three. Restated in terms of the research, a clearly articulated BPR project goal and associated objectives would be critical towards creating a positive influence in the execution of a successful BPR project.

Moving back to the adaptation of the Root Definition, two concepts from a Systems Thinking perspective were used, namely, CATWOE and PQR (b/f Chapter 5). These concepts can be used to define a robust and clear goal of a BPR project. This will create a solid foundation for creating a conceptual model guided by the defined goal and will be discussed next.

6.2.2 Identify and Categorise Project Influences

The activity to identify and categorise project influential factors is firstly rooted in the SSM comparison stage, Stage 5, of the SSM model (b/f Chapter 5). The stage as a concept will be used and adapted to suit the researcher's needs accordingly. Taking into account that the SSM Stage 5 requires that a comparison be made between the outputs of Stage 2 and 4, it is quite important to note that the researcher has not adapted or used Stage 2 of the SSM model as defined by Checkland, 1999. This then means that there should be an alternate reference in order for a comparison to be made against the conceptual model. Based on prior research and the research presented in this thesis the research has produced, Table 4.18: New versus Prior Researched Factors (b/f Section 4.9.2), which will be used to create an alternate reference.

Table 4.18, as stated above will be used to create an alternate reference for which a comparison will be made with the conceptual model created. In order for this to be effective, the same logic has to be applied to the creation of the alternate reference model to aid with the comparison. The logic of using nouns to create a conceptual model will be applied against the project influential factors in order to create a comparable model (c/f Section 6.3) against the conceptual model.

This comparison will then be used to identify which factors are prevalent or not prevalent and which factors, could potentially, have a positive or negative influence on the considered BPR project or initiative. The main outcome being sought is to determine whether the negative influences are as relevant to the organisation and to the conceptual model created for the specific BPR project under consideration.

These negative influences which have been identified will then need to be investigated further in order to mitigate the negative influence. The approach for which as it relates to the SSM model and its adaptation is covered next.

6.2.3 Mitigate Negative Influences

Stage 6 of the SSM model (b/f Chapter 5) suggests the need to identify the feasible and or desirable changes that can be made. Checkland, 1999, also suggests that changes are relevant in terms of structural, procedural or attitudinal in nature. These three change types will form part of the BPR management approach, especially in guiding the process of determining what can be changed in order to mitigate negative influences.

It is important to note that even though the above alludes to the creation of mitigation steps for all negative influences identified, not all negative influences need mitigation and neither does it mean that all mitigation steps identified need to be carried out in terms of actions and activities. There needs to be a balanced view as to which negative influences have a higher impact on the outcome of the proposed BPR project as well as which mitigation steps can be pragmatically implemented within the shortest space of time. This then leads us to the next section, which looks at the adaptation and consumption of Stage 7 of the SSM model.

6.2.4 Focused Mitigation

Stage 7 of the SSM model (b/f Chapter 5) brings us to the end of the adapted aspects of SSM as it pertains to the research. However, it does not mean that the BPR management approach will follow the same end point. The BPR management approach will still need to ensure that the work carried out thus far is not lost and is carried into the BPR project execution stages as defined by the BPR execution method that was selected by the organisation (c/f Section 6.3).

Returning to Stage 7 of the SSM model and its adaptation and or usage in the BPR management approach, the researcher has chosen to use the SSM Stage 7 conceptually. This means that the concept of Stage 7, as it relates to the implementation of identified changes, is relevant and will remain intact. Furthermore, there needs to be an approach or framework that could be used in order to guide which of the identified changes and or mitigation steps could be implemented in order to improve the chances of success, as it pertains to the proposed BPR project or initiative.

This framework will make use of Meadows, 2008 suggested leverage points, in addition to the current researched outcomes of the cross case analysis conducted as part of the case study (b/f Section 4.9.3), which specifically refer to the categorised factors and their respective relative impacts that these have on the outcome of a BPR project or initiative.

Now that the adoption of the systems concepts defined by Checkland, 1999, and Meadows, 2008 has been covered, the next step would be to define the BPR management approach recommended as part of the outcomes of the research presented in this thesis and fulfilling the research purpose. The next section will firstly provide an overview of the recommended model. Thereafter each component of the model will be described in detail in terms of its use and implementation.

6.3 The P^2OE^2M Model Defined

In this section, the research presented in this thesis, aims to fulfil the research purpose, namely, to derive a fit-for-purpose management approach that would guide project leaders in successfully executing their projects within their organisational environments (b/f Section 1.2). With the aid of a case study analysis, the researcher determined that an organisational environment has a

critical influence on the outcome of an executed BPR project or initiative. This influence can be a positive or negative one, depending on the existence of certain project influential factors (b/f Chapter 4). In aiming to mitigate the above mentioned negative influences, the researcher turned to systems thinking and, more specifically, the SSM model in order to derive a management approach that would facilitate the mitigation of identified negative influences.

In seeking the management approach, the researcher developed the **P**re **P**roject **O**rganisational **E**nvironment **E**nablement **M**odel or the **P^2OE^2M** model. Pre Project, because the model is to be executed before engaging or executing the desired BPR project or initiative. Organisational Environment Enablement, because the model helps to identify and mitigate negative influences on a BPR project that is being considered, thereby enabling the organisational environment to improve the rate of success of the considered BPR project.

The next section will briefly describe the model after which the ensuing sections will elaborate in greater detail the phases that are considered as part of the model.

6.3.1 Overview of the P^2OE^2M Model

Before taking a brief look at the P^2OE^2M model, one first needs to understand that this model does not replace any BPR method / methodology such as TOC, Six Sigma and Lean or any project method / methodology such as PRINCE 2 or PMBOK. This model is a management approach aimed at improving the success rate of executing a BPR project or initiative by enabling the organisational environment in such a manner that any negative influences that exist as part of the organisation can be identified and mitigated prior to the execution of a desired BPR project or initiative. This means that the need for an execution method / methodology is still maintained. Based on the organisation's needs and standards a particular method or methodology should be employed. This is not explored any further within the research presented in this thesis, as this is not the intent of the research, but it is supported by prior research (Bell & Christina, 2006).

Figure 6.1 highlights the phases of the P^2OE^2M model. The researcher elected to keep the SSM modelling approach (b/f Chapter 5) to depict the phases diagrammatically. This approach, as can be seen, continues into the next section where the detail of each phase is exposed.

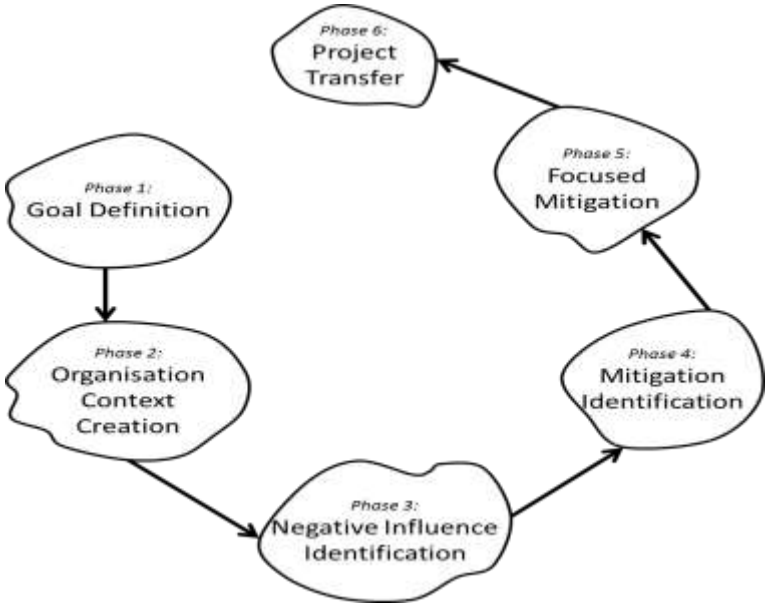


Figure 6.1: P^2OE^2M Model

Phase 1, **Goal Definition**, of the P^2OE^2M model is aimed at defining a clear goal for the desired BPR project. This will be achieved by using the CATWOE and PQR models (b/f Sections 5.2.2 and 6.2.1).

Phase 2, **Organisation Context Creation**, is where the organisation will be analysed against the backdrop of the defined goal to determine all the aspects that will be required in order to achieve the goal. This will be achieved by pulling out all the nouns and using these nouns to create a context of the organisation as it relates to the desired BPR project or initiative represented by the defined goal.

Phase 3, **Negative Influence Identification**, will now begin to focus on the improvement of the desired BPR project execution success rate. This will be achieved by comparing the organisational context against a framework derived from the research presented in this thesis, based on all the project influential factors.

Phase 4, **Mitigation Identification**, will be achieved by elaborating on a technique that can be used to ensure that feasible and desirable mitigations are identified for mitigating the identified negative influences. The technique is centred around identifying the right stakeholders to include in an "executive one-day workshop" with the aim of traversing all identified negative influences and proposing feasible and desirable mitigations.

Phase 5, **Focused Mitigation**, is the phase where the most influential negative influences and their mitigations will be looked at in order to determine which mitigations will be implemented and then to implement them. This will be aided by the framework derived by the research presented in this thesis. This framework is called the BPR Project Success Probability Chart (c/f Section 6.3.2.5).

Phase 6, **Project Transfer**, is a phase that will be executed once the BPR project begins execution. This phase will ensure that all known negative influences that are not mitigated are carried over to the project as risks. Since most BPR and project execution methods / methodologies contain risk management practices and techniques this phase is deemed appropriate as it will further contribute towards improving the success rate of the executed BPR project.

The above brings us to the end of the overview of the P^2OE^2M model. The next few sections will provide more detail on each phase.

6.3.2 The P^2OE^2M Model Phases

The previous section focused on providing an overview of the P^2OE^2M model. This section will look at the detail of the model, starting with the first phase, Goal Definition, and ending with the last phase, Project Transfer.

6.3.2.1 Goal Definition

Goal Definition is the first phase of the P^2OE^2M model. Within this phase three activities need to be performed, as depicted by Figure 6.2. The first activity involves applying the PQR model (b/f Chapter 5) towards defining the goal; the second activity involves applying the CATWOE model (b/f Chapter 5) to defining the goal; and the third activity uses the outputs of the first two activities and produces the outcome of Phase 1, which is the goal of the proposed BPR project or initiative. This phase is an important aspect as it sets the platform for ensuing phases. As mentioned by Meadows, 2008, a clearly defined goal of any system is

the third most influential and impactful leverage point towards the system achieving its purpose. The next few paragraphs will detail the application of each activity.

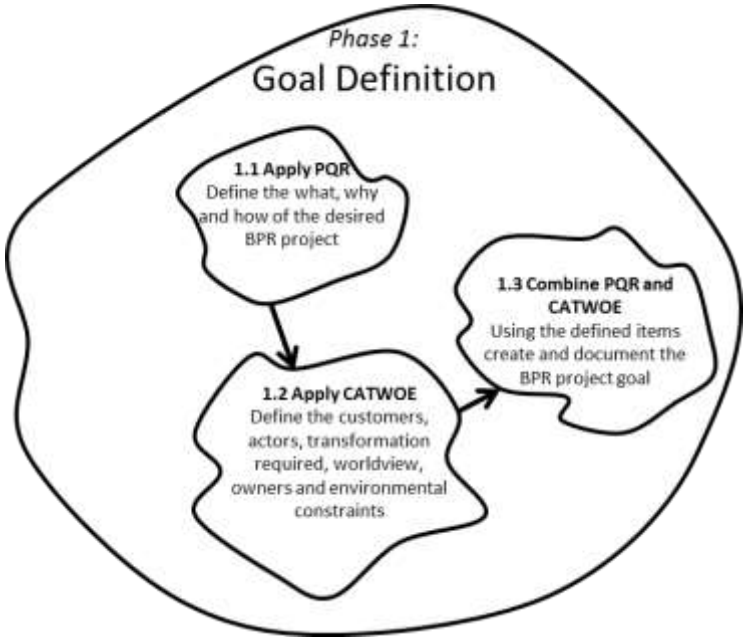


Figure 6.2: P^2OE^2M Model Phase 1 Activities

Activity 1.1 Apply PQR

Before one can move towards the application of the PQR model as described by Checkland, 1999, a summary of the PQR model is probably required. PQR was positioned as an alternative to the CATWOE model in defining Root Definitions as part of the SSM Model (Checkland, 1999). This has been adapted (bf/ Section 6.2) within the P^2OE^2M model in order to aid the definition of a goal statement for the proposed BPR project. It is a term that can help determine the following three things, as it relates to the derivation of a goal:

- P – What we are doing
- Q – How we are going to do it
- R – Why we are doing it

In order to contextualise the application of the PQR model a simple example follows. This example will be used as a golden thread all the way through the detailing of the ensuing phases of the P^2OE^2M model. The example was deliberately chosen to be relevant to the BPR phenomenon.

The example follows:

"Organisation X would like to consolidate two separate call centres, handling the application of an account and the fulfilment of the account opening respectively, including the management of status queries, into a single call centre. Organisation X customers are complaining that they have to continuously phone different call centres in order to get updates which is degrading their experience. As a result, Organisation X is losing potential customers. In aiming to achieve this Organisation X would like to propose that a BPR project be kicked off in order to realise the consolidation of the two call centres"

Using the simple example above, one can now apply the PQR model. Firstly, let us define the “what”. Organisation X wants to consolidate two separate call centres. This is what organisation X wants to do. Secondly we can move on to defining how Organisation X plans to do this. Organisation X proposes a BPR project through which the two call centres will be consolidated. Thirdly, “why” is Organisation X doing what it is proposing? Organisation X is losing potential customers.

As can be seen, applying the PQR model is fairly easy notwithstanding the fact that one also has a simple example to work with. Using this information, one can create a first draft of our goal definition. The goal definition would be described as follows:

“Organisation X wants to consolidate two call centres by executing a BPR project in order to stop the loss of potential customers.”

Now that we have created a draft goal definition we can move on to the next step in phase 1 and that is to apply the CATWOE model.

Activity 1.2 Apply CATWOE

Applying the CATWOE model is very similar to applying the PQR model. The intent of the model is not adapted, only its intended use is adapted. As mentioned by Checkland, 1999, the CATWOE model guided the definition of a robust root definition. Within the P^2OE^2M model the CATWOE application aids in defining a robust goal.

As mentioned previously (b/f Chapter 5), “C” within the CATWOE model is aimed at defining the customer/s. If one were to take the example, one would end up stating the obvious, as the example points to the fact that Organisation X is losing potential customers. The key word to pick out is “potential”. These are not Organisation X’s customers as yet. These are potential customers who would like to open an account with Organisation X and who would have made an application to Organisation X for the fulfilment thereof. So the customer of Organisation X is actually potential customers who have applied for an account from Organisation X. It is important to note that we deliberately stated specifics and not merely mentioned the obvious.

The second letter of the acronym CATWOE stands for actors. Using our example, one now needs to identify the actors that our example alludes to. In order to execute a BPR project, one would need a project team and as such the team would serve as the actors.

The third letter “T” refers to what is being transformed. Organisation X would like to merge two call centres. As with defining the customer and elaborating more on the specifics, one should be specific about what is being transformed. The account application call centre and the account opening call centre are to be merged into one call centre. In addition, the query management within these two call centres has to merge as well. Thus far the customer, the actor and what one is aiming to transform have been identified. This now leads us to the “W” or worldview that is in question.

To elaborate further on the worldview, the worldview should help understand and identify the problem statement or situation that needs resolution as perceived by any individual and or groups. Based on our example the worldview in question is that of poor customer experience due to Organisation X’s inadequate handling of customer calls for queries and status updates.

The next step is to identify the “O”, the owners, the individuals who can either start or stop the proposed BPR project. Hypothetically let us assume that the two managers accountable for the respective call centres are our owners. The reason for making this statement will become apparent when one moves to Phase’s 3 and 4 of the P^2OE^2M model.

The last area to look at as directed by the CATWOE model is that of the environment (“E”). The environment refers to both internal and external to Organisation X, as it relates to solving the problem statement depicted by the worldview described earlier. Notice that the researcher links the environment with that of the worldview, this is an important aspect as describing or identifying elements of an environment can be open ended unless a boundary is placed on it. The worldview is the boundary that is placed on identifying environmental elements for consideration when defining the goal. It is important to also note that the environment being referred to is the environment in which the problem situation is occurring. Noting the above statements, one can assume that Organisation X is losing potential customers as its competitors offer the same type of accounts and as such Organisation X finds itself in a very competitive environment.

Now that both the PQR and CATWOE models have been applied, one needs to merge the outcomes into a robust goal. This is achieved in the next step of Phase 1.

Activity 1.3 Combine PQR and CATWOE

The final activity of Phase 1 is to combine the outcomes of the application of the PQR and CATWOE models in defining a goal. A template can be used to aid the consolidation of these. Table 6.1 is such a template that can be used to aid the completion of Phase 1.

Table 6.1: Template to Apply the PQR and CATWOE models

Step to be performed	Step Description	Outcome
Identify P	Identify “what” needs to be done or “what” needs to be achieved	Organisation X wants to consolidate two separate call centres
Identify Q	Identify “how” the “what” is to be achieved	Organisation X proposed a BPR project
Identify R	Identify “why” the “what” is being aimed for	Organisation X is losing potential customers
Identify C	Identify the customers that are being impacted or will be impacted if the “what” is to be achieved	Customer of Organisation X is actually potential customers who have applied for an account from Organisation X
Identify A	Identify the actors that would execute the “how” in order to achieve the “what”	A BPR Project Team
Identify T	Identify the transformation that would take place if the “what” is successfully executed	The account application call centre and the account opening call centre are to be merged into one call centre. In addition, the query management within these two call centres has to merge as well

Identify W	Identify the problem statement and clarify the "why" from a specific view point or worldview	Poor customer experience due to Organisation X's inadequate handling of customer calls for queries and status updates
Identify O	Identify who owns the resolution of the problem	The two managers accountable for the respective call centres
Identify E	Identify the problem situations environment	A competitive environment

Using the information from Table 6.1, the following goal definition could be derived: (note that all elements were used in some form within the derived goal)

"The managers for the call centres that deal with account applications and account openings within Organisation X are proposing that a BPR project team be assembled to merge the account application call centre with the account opening call centre including the merging of the respective query management processes because Organisation X is losing potential customers to its competitors due to inadequate call handling of queries and status updates by both call centres."

Now that a clear goal is defined the next phase of the P^2OE^2M model can be executed. Phase 2 looks at the creation of the organisation context model.

6.3.2.2 Organisation Context Creation

The Organisation Context Creation phase of the P^2OE^2M model is based on trying to understand the current state of the organisation as it relates to the required elements needed to achieve the defined goal. This phase consists of two activities, the first being to identify the nouns or alternatively described as identifying the "who" and "what" of the organisation, and the second activity being to use the output of the first activity to derive a contextual diagram of the organisation.

Figure 6.3 represents Phase 2 of the P^2OE^2M model.

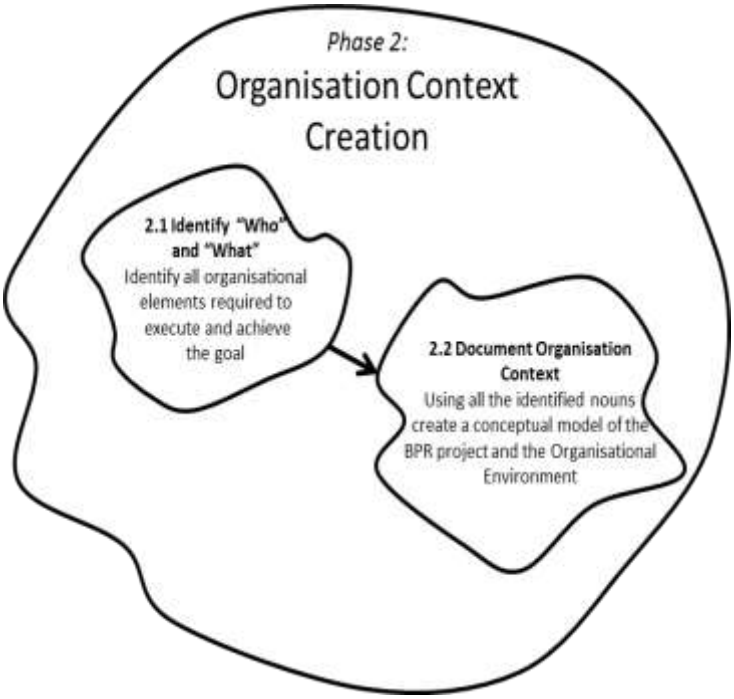


Figure 6.3: P^2OE^2M Model Phase 2 Activities

Activity 2.1 Identify "Who" and "What"

The first activity within phase 2 of the P^2OE^2M model should guide the user in identifying the "who" and the "what" required to achieve the proposed BPR project. A question based framework directs the achievement of this aim. The question based framework is based on Checkland, 1999, Formal System. Having defined the goal of the proposed BPR project as part of Phase 1, the first component of the Checkland, 1999, Formal System has been achieved. This then leaves us with 8 other components of the Formal System. These components were adapted in order to create the question based framework. Table 6.2 outlines the question based framework as well as the answers based on our example (b/f Section 6.3.2.1) (note that the answers for the example is hypothetical and is not meant to be complete and exhaustive. It is used to illustrate the use of the question based framework and ensures continuity in illustrating the P^2OE^2M model across the phases)

Table 6.2: Question Based Framework to determine the "What" and "Who"

Adapted Formal System Components	**Question/s**	**Answers for the example**
Performance Measurement	What are the measures of success for the proposed BPR project?	• A merged call centre • Increase in new customer acquisitions
Decision Making	Who will be the decision maker for the proposed BPR project?	• Account opening call centre manager and the account application call centre manager
	In which forums will decisions be taken?	• A project board
BPR Project System Components	Which business areas will be involved in executing the proposed BPR project?	• The account application and account opening call centre, the organisation project office and human resource department and a supplier or vendor for business process engineers.
	Who are the proposed BPR projects impacted stakeholders?	• The staff at the two call centres • Potential customers
BPR Project System Components Feedback Mechanisms	What will be the forms of communication that will be used within the project team?	• Minutes from the project board meeting • Various forms of project documents
External Components and Feedback Mechanisms	Which external stakeholders or business areas will need to be informed about the proposed BPR project and its progress?	• The account management call centre and its staff
	How will they be communicated with?	• Company news letter

Adapted Formal System Components	Question/s	Answers for the example
Resources	What is the estimated Budget required for the proposed BPR project and does the organisation have unconsumed project investment funds? What are the tools, methods, and skills required to execute the proposed BPR project and does the organisation have them?	• An estimated budget of R1 200 000.00 is required to execute the proposed BPR project. • **S**ubject **M**atter **E**xperts (SME) from the two call centres, A Project Manager, Business Process Engineering Practitioners, Human Resource Representative, the organisations selected BPR methodology, a project management tool and a document repository
Boundaries/External Influential components	Name the boundaries of the proposed BPR project decision making authority? What and or who external to the proposed BPR project would have an influence on the outcome of the proposed BPR project?	• 5% variance of budget and 5% variance on delivery timelines • 0% variance to scope • The organisations investment committee • The account management call centre manager
Continuity / Fulfilling purpose and or goal	What are the proposed BPR project outputs which will ensure that the goal is met and sustained?	• Analysis of the as-is processes of both call centres • A new target operating model for the merged call centre

In Table 6.2 one notices that the application of the question based framework directs the answers towards selecting nouns, however, the answers themselves are explanatory in nature and do not necessarily only contain the nouns themselves. This approach aids in the building of the organisation context diagram, which will be detailed as part of describing activity 2.2, Document Organisation Context.

Activity 2.2 Document Organisation Context

Activity 2 within phase 2 of the P^2OE^2M model is aimed at creating a diagrammatic representation of the answers that were supplied for the question based framework described in the previous paragraphs. The following three steps need to be followed when creating the context diagram:

- First, extract all the “what” and “who” from the answers and place them on the context diagram.

- Second, select each “what” and “who” and draw an arrow indicating a link to an identified element that shares a relationship.
- Third, indicate the relationship between the linked nouns on the context diagram.

By using the three steps noted above, the example context diagram, as depicted by Figure 6.4 was created. It should be noted that only the “what” and “who” identified in activity 2.1 should form part of the organisations context diagram as it is a reflection of the organisations current state. A further point to note is that no analyses of the organisation context diagram should be done in this phase. The next phase, Phase 3, Negative Influence Identification, begins our analysis work towards improving the success rate of the proposed BPR project. The next section will describe and illustrate the execution of Phase 3, Negative Influence Identification, of the P^2OE^2M model.

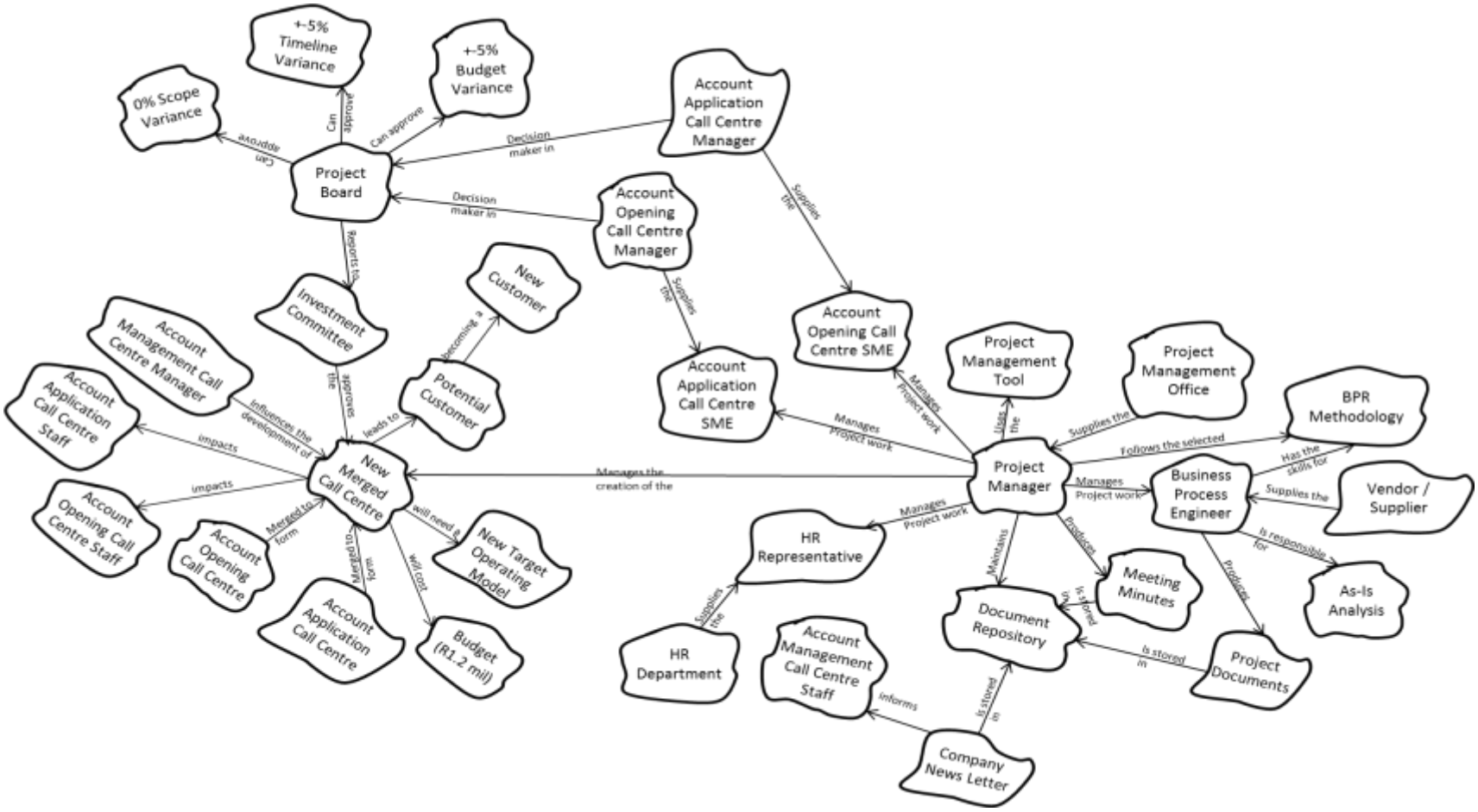


Figure 6.4: Example Organisation Context Diagram

6.3.2.3 Negative Influence Identification

Phase 3 of the P²OE²M model is where the case study outcomes (b/f Section 4.9) start to play a role in analysing the outputs from Phase 2. Phase 3 only has one activity, however, within that single activity two steps occur. This is depicted in Figure 6.5. The next few paragraphs will describe the activity and its associated steps. We will also continue with our example to illustrate its use and output. The output will be used to illustrate the use of Phase 4, Mitigation Identification.

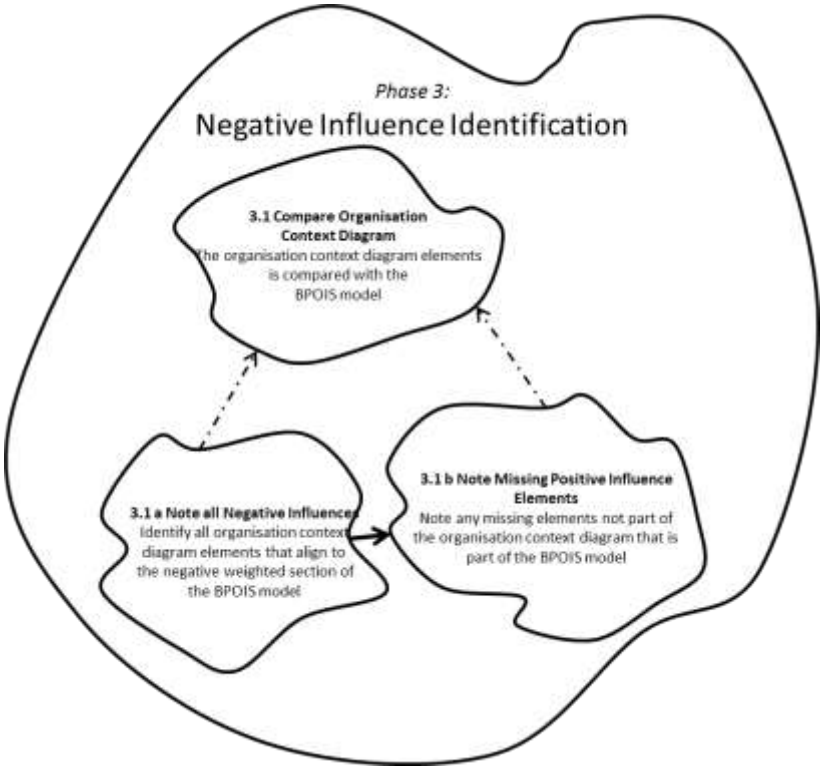


Figure 6.5: P²OE²M Model Phase 3 Activity

Activity 3.1 Compare Organisation Context Diagram

In order for negative influences to be identified in the organisation context diagram (b/f Section 6.3.2.2), a framework was developed using the BPR project influential factors. The BPR project influential factors were adapted to ensure relevance of analysis. This was needed due to the nature of the execution of the P²OE²M model, namely, “pre project”. This resulted in all BPR project influential factors having an influence on the outcome of a project within the lifecycle of the project post initiation, such as, “as-is analysis of existing processes is of good quality” and “the executive sponsor remained stable during the course of the project” being excluded from the model. The remaining BPR project influential factors were reworded in a question format that represented the state of pre project initiation, for example, the factor, “line management ownership of project delivery was prevalent,” was reworded to reflect that line managers are resource managers and posed the question that is represented by historical interactions resulting in the positive statement, “the organisation resource suppliers do not actively participate in project execution.” Each factor that was adapted was positioned on a scale with a positive statement at one end, highlighting a positive influence, and on the other end, a negative statement was positioned highlighting a negative influence.

This framework was developed by the researcher as part of the research presented in this thesis and was termed the "**B**PR **P**roject **O**utcome **I**nfluential **S**cale" or BPOIS as an acronym and appears next as Figure 6.6. Now that there is a framework called the BPOIS model, one can move ahead to illustrate its application with the continuation of the example. One will start with Activity 3.1 a, and then move to Activity 3.1 b, immediately thereafter move to the fourth phase of the P^2OE^2M model, Mitigation Identification.

Figure 6.6: BPR Project Outcome Influential Scale

Step 3.1 a. Note all Negative Influences

The first step in Activity 3.1 involves the identification of negative influences. This is achieved by looking at every element in the organisation context diagram as one works through each category of the BPOIS model. Once an element aligns itself to a negative statement, a tick "✓" is placed in the block next to the relevant statement. The tick "✓" is a representation of alignment. A few examples of alignment, follows.

Example 1:

From the organisation context diagram one notes that a vendor has to supply the Business Process Engineer. This means that the organisation does not have the required skills to execute the project immediately and has to acquire such a skill from a vendor. This then aligns itself to the negative statement within the Project Management category. The following will then be noted in the BPOIS model Project Management category as depicted in Figure 6.7.

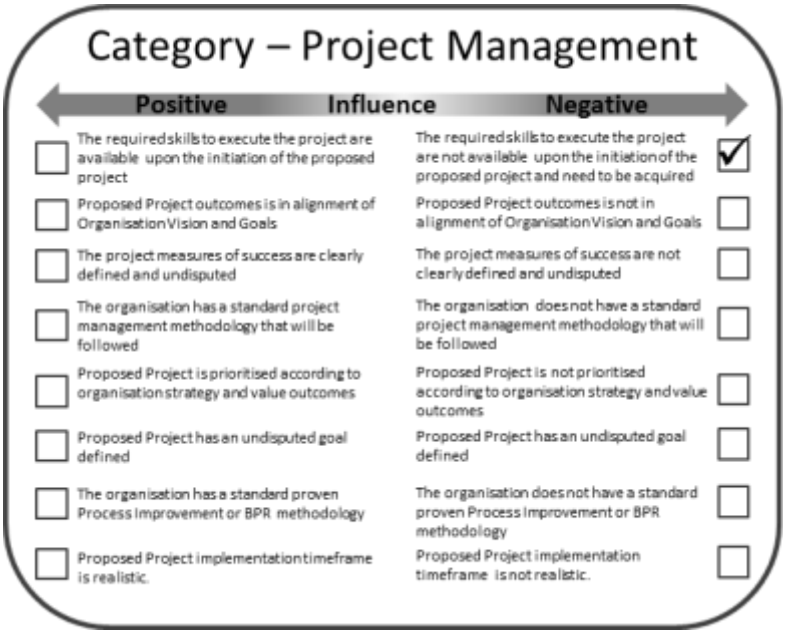


Figure 6.7: Example 1 Application of the BPOIS Model

Example 2:

From the Organisation Context Diagram, one notes that there are two decision makers accountable for the proposed BPR project. These are the Account Application Call Centre Manager and the Account Opening Call Centre Manager. This aligns itself to the negative statement in the Organisation Structure category and is noted as depicted in Figure 6.8.

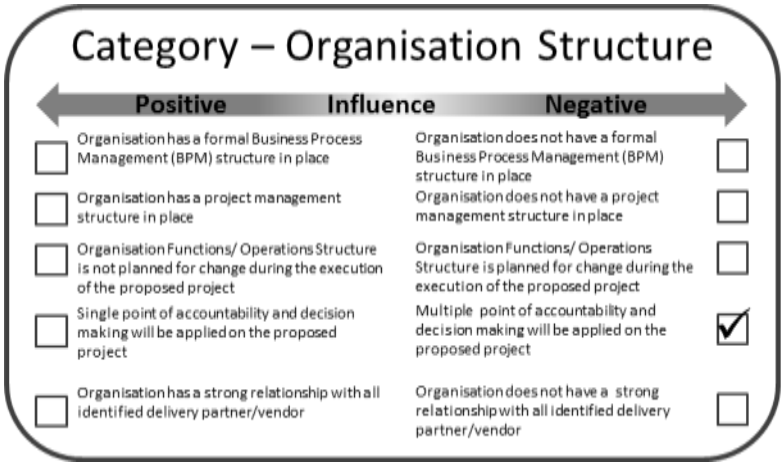


Figure 6.8: Example 2 Application of the BPOIS Model

Using the approach described in the two examples above the application of step 3.1 a. was completed for our example organisation context diagram. This yielded the following results, depicted in Figure 6.9:

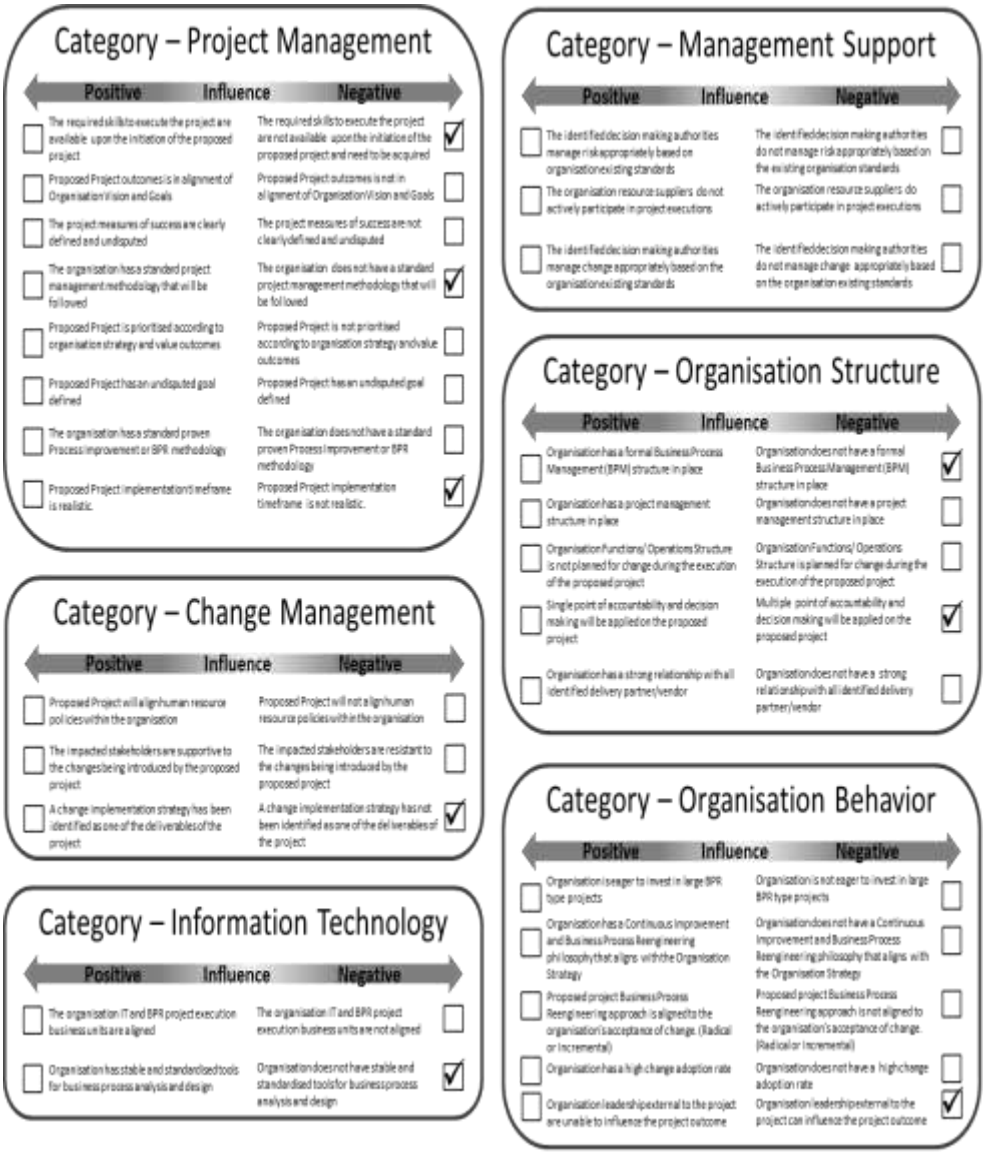


Figure 6.9: Example Results for Step 3.1 a

Having identified the negative influences on the proposed BPR project's outcome, one moves forward to the next step where further analysis is required to identify the missing positive influences.

Step 3.1 b. Note Missing Positive Influencing Elements

It was quite important in Phase 2 to identify the proposed project's decision making stakeholders and the stakeholders that could influence its outcome. The reason for this is due to the nature of this step, which is an interview based analysis. This step then also uses the organisation context diagram but in a different dimension.

This is similar to what PMI, 2013, suggests should be performed on all identified stakeholders in their Stakeholder Management domain (b/f Section 2.4.1). The approach in the P^2OE^2M model, however, is different in terms of the outcomes the

user needs to achieve. In PMI, 2013, a stakeholder register is maintained in order to manage risk to the project by ensuring that the most influential stakeholders are identified and managed appropriately. However, the approach here is to use the BPOIS model as a guiding questionnaire to determine which elements the identified individuals feel are missing from the organisation, which could positively influence the project outcome. The following approach has to be followed in order to complete this step:

- Each stakeholder represented as a decision maker or an influencer in the organisation context diagram has to be interviewed on a personal engagement. A group engagement is most likely to create debate and this is not the intention of this phase.
- The identified missing positive influencing elements should then be noted for each interviewed stakeholder.
- A cross "×" should be placed in the relevant blocks in the BPOIS model for each noted missing positive influencing element.

Once all the identified missing positive elements are noted, the next phase of the P^2OE^2M model can begin, which is the Mitigation identification.

As an aid, to illustrate continuity, Figure 6.10 depicts the hypothetical completion of the application of Phase 3 for our selected example.

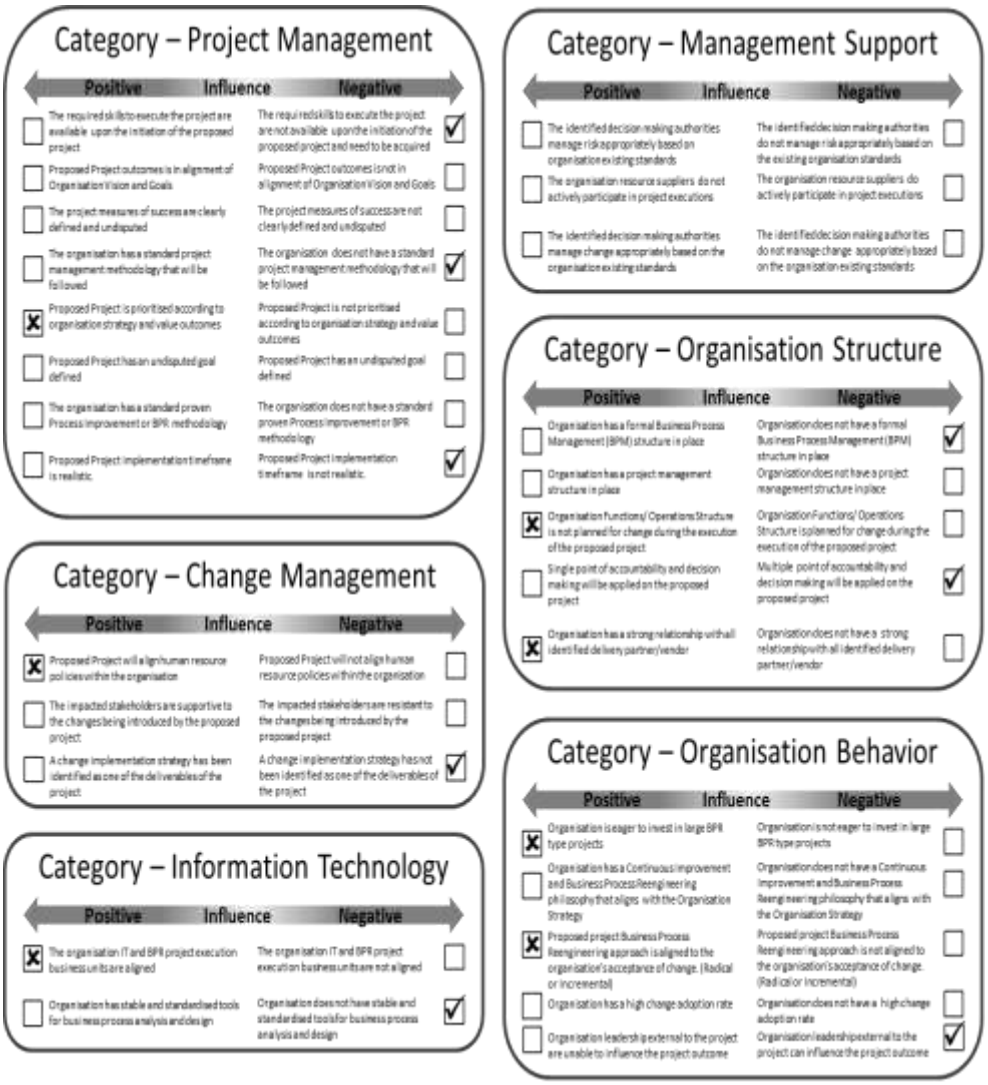


Figure 6.10: Example Results for Phase 3 of the P²OE²M Model

6.3.2.4 Mitigation Identification

Mitigation as a term is generally associated with risks. The researcher propounds that if a negative influence is present within the BPR project system (b/f Chapter 5), a risk to the proposed BPR project would exist. This is the same that can be said for missing positive influences. The main risk posed is that the project outcome in terms of its success rate is reduced. This risk would require mitigation steps and, as such, this phase will focus on identifying those mitigation steps for each negative influence and each missing positive influence resulting from applying Phase 3.

An approach will be required to achieve the above, and for that we first turn to the literature that was reviewed (b/f Chapters 2 and 5). Manganelii and Klein, 1994, suggest an approach towards ensuring alignment of project teams and organisation leadership as it relates to project scope and goals (b/f Section 2.3.5). Manganelii and Klein, 1994, suggest that an executive workshop be held to achieve this alignment. Similarly, Checkland, 1999, suggests that all individuals interested in solving a problem situation be involved in some sort of a meeting or workshop in order to determine the changes that will be required to resolve the problem situation.

The above concepts were adopted for use in Phase 4 of the P²OE²M model. The approach of conducting a workshop is used, however, the aim of the workshop and its outputs are different. The aim of the workshop is to align all identified stakeholders within the organisation context diagram with the risk of failure for the proposed BPR project and to solicit debate and agreement on risk mitigation steps that need to be put in place to minimise the risk of negative project outcome influences and missing positive outcome influences.

Similar to Phase 3, only one activity occurs in this phase. Figure 6.11 depicts the activity for Phase 4.

Figure 6.11: P²OE²M Model Phase 4 Activity

Activity 4.1 Host One Day Workshop

As mentioned above the aim of the workshop is to align all identified stakeholders within the organisation context diagram with the risk of failure for the proposed BPR project and to solicit debate and agreement on risk mitigation steps that need to be put in place in order to minimise the risk of negative project outcome influences and missing positive outcome influences. The mitigation steps identified will require some sort of change to be made in order to ensure that the identified associated risks to the project outcome are appropriately mitigated. Checkland, 1999, suggested that only the following three types of changes can be made:

- changes in structure,
- changes in procedure and
- changes in "attitudes"

The third change, changes in "attitude", which alludes to changes in behaviour and culture, is probably the hardest, yet most influential change that can be made, which as supported by Meadows, 2008 when she posited the system leverage points. Taking into account Checkland, 1999, and Meadows, 2008, suggestions that changes in attitudes and behaviours of individuals should not be attempted as it is not easy to influence the correct shift required, the mitigation steps identified to limit the risk of a negative project outcome within this phase of the model should focus on:

- changes in organisation and or project structure
- changes in organisation and or project procedure

The following approach should be employed when hosting the one-day workshop:

- Identify and invite all key stakeholders by using the organisation context diagram as a guide.
- Once in the workshop begin by creating a common platform by presenting the output of Phase 3.
- Secondly pick each noted item on the BPOIS model and discuss and agree the steps required to mitigate any risk that the negative influencing element or missing positive influence element poses to the project outcome.
- Note the agreed steps, as they will be used within the next two phases.

Table 6.3 depicts the template that was created to illustrate the results of Phase 4 and serves as a continuation of the illustration component for our selected example. The results of the example are not meant to be exhaustive and are used merely to illustrate the application of phase 4 and the results that can be achieved.

Table 6.3: Example Results for P^2OE^2M Model Phase 4

Statement Description	BPOIS Statement	Mitigation steps required for organisation and or project structure	Mitigations steps required for organisation and or project procedures
Missing Positive Influence	Proposed Project is prioritised according to organisation strategy and value outcomes	No changes identified	Proposed project to be presented at the investment committee for prioritisation
Existing Negative Influence	The required skills to execute the project are not available upon the initiation of the proposed project and need to be acquired	Business Process Engineers to be recruited and form part of the organisation	Engage with Vendor prior to project initiation to secure a contract for a Business Process Engineer

Existing Negative Influence	The organisation does not have a standard project management methodology that will be followed	A senior project manager must be assigned to the BPR proposed project	An initiative to be executed within the organisation to select and implement a standard project management methodology
Existing Negative Influence	Proposed Project implementation timeframe is not realistic.	No changes identified	A full estimate of the BPR proposed project should be conducted and presented at the project board for acceptance once the project is initiated and the scope of work is clearly understood
Missing Positive Influence	Proposed Project will align human resource policies within the organisation	No changes identified	No changes identified as human resource policy alignment is not part of the scope for the project.
Existing Negative Influence	A change implementation strategy has not been identified as one of the deliverables of the project	A change manager must be appointed to the project	The project deliverables must include a change implementation strategy
Missing Positive Influence	The organisation IT and BPR project execution business units are aligned	The IT and BPR project execution business units are to merge to form one project execution business unit The project board has to include a senior member from the IT project execution business unit	No changes identified.
Existing Negative Influence	Organisation does not have stable and standardised tools for business process analysis and design	No changes identified	No changes identified
Missing Positive Influence	Organisation Functions/ Operations Structure is not planned for change during the execution of the proposed project	No changes identified	No changes identified
Missing Positive Influence	Organisation has a strong relationship with all identified delivery partner/vendor	Vendor Account Manager to be part of the project board	No changes identified
Existing Negative Influence	Organisation does not have a formal Business Process Management (BPM) structure in place	No changes identified	No changes identified
Existing Negative Influence	Multiple point of accountability and decision making will be applied on the proposed project	Project board chairman should be the executive manager heading up all contact centre operations	No changes identified
Missing Positive Influence	Organisation is eager to invest in large BPR type projects	A BPR project investment committee should be established within the organisation	The current investment committee to implement a process for fund allocations to BPR initiatives.
Missing Positive Influence	Proposed project Business Process Reengineering approach is aligned to the organisation's acceptance of change. (Radical or Incremental)	No changes identified	Project should revise the implementation approach so that it is incremental and phased.
Existing Negative Influence	Organisation leadership external to the project can influence the project outcome	Project board chairman should be the executive manager heading up all contact centre operations	Project to manage key influential stakeholders on a weekly one-on-one feedback engagement session

The next phase of the P^2OE^2M model, Phase 5, Focused Mitigation follows next.

6.3.2.5 Focused Mitigation

Phase 5 of the P^2OE^2M model is aimed at determining which mitigation steps can be implemented. Implementation will occur in two separate instances. The reason for this is that not all the identified mitigation steps can be implemented outside of

the project itself. This reason will be explained further as we describe and illustrate the three activities that make up Phase 5. Phase 5 activities are depicted by Figure 6.12.

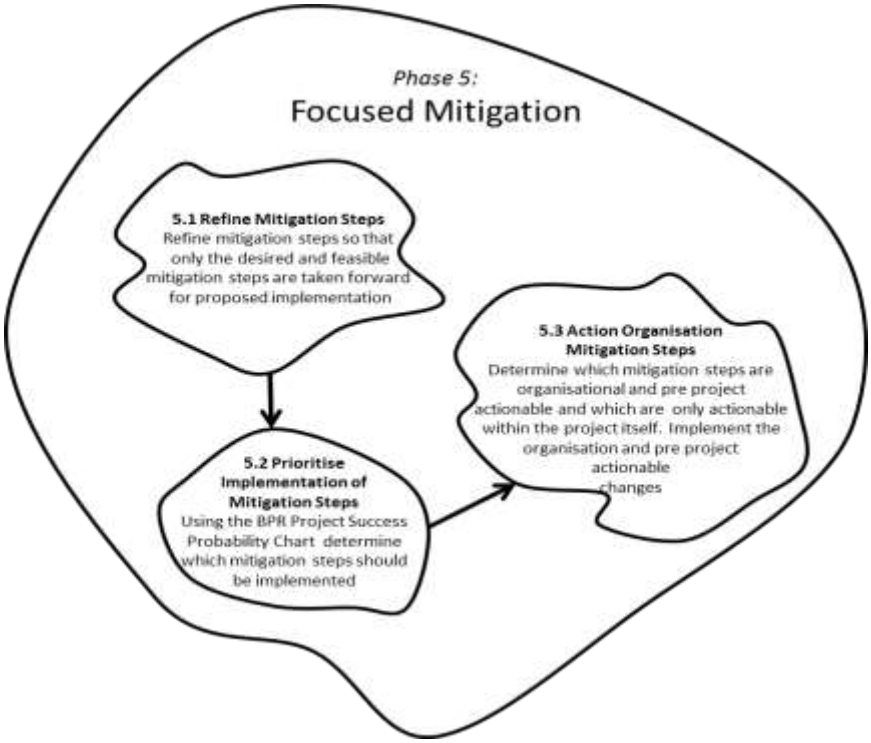


Figure 6.12: P²OE²M Model Phase 5 Activities

Activity 5.1 Refine Mitigation Steps

The first activity that needs to be performed within Phase 5 is adapted from SSM Stage 6 (b/f Chapter 5). Checkland, 1999, suggests that the changes identified as part of the SSM Stage 5 application should then be refined in Stage 6 by ensuring two key principles are met.

The first principle is that the changes should be desirable. These are the changes that are generally systemic in nature and are gained from insights into the root definitions and the conceptual modelling activities. This is similar to what was achieved in Phase 4 of the P²OE²M model where desired mitigation steps were identified in a workshop.

The second principle, as described by Checkland, 1999, is that the changes should be feasible given the organisation culture, the problem situation, the people in the problem situation and their collective experiences and prejudices. This principle is adopted in this activity. So, Phase 5, Activity 5.1 is focused on refining the mitigation steps identified in Phase 4 by ensuring the identified mitigation steps are feasible.

This activity is a fairly straightforward activity as it involves getting agreement from the managers and or executives as to what mitigation steps are feasible within a short period of time. The organisation context diagram should guide the identification of the managers and or executives required to make the decision as to which mitigation steps are feasible.

The following two approaches can be used to get agreement on the mitigations steps:

- The first approach is to hold individual meetings with the owners of the business functional areas for which the mitigation steps have been identified to determine feasibility.
- The second approach involves holding another group session or workshop with all the impacted business functional area owners to debate and agree on the feasibility of the mitigation steps identified.

Once this activity is completed, a refined list of mitigation steps should be produced for consumption in Activity 5.2, where the priority of the refined mitigation steps will be determined.

For the purpose of continuing our illustration Table 6.4 serves as an example output of Activity 5.1.

Table 6.4: Example for Activity 5.1 Refine Mitigation Steps

Statement Description	BPOIS Statement	Feasible Mitigation Steps
Missing Positive Influence	Proposed Project is prioritised according to organisation strategy and value outcomes	Proposed project to be presented at the investment committee for prioritisation
Existing Negative Influence	The required skills to execute the project are not available upon the initiation of the proposed project and need to be acquired	Engage with Vendor prior to project initiation to secure a contract for a Business Process Engineer
Existing Negative Influence	The organisation does not have a standard project management methodology that will be followed	A senior project manager must be assigned to the BPR proposed project
Existing Negative Influence	Proposed Project implementation timeframe is not realistic.	A full estimate of the BPR proposed project should be conducted and presented at the project board for acceptance once project is initiated and the scope of work is clearly understood
Missing Positive Influence	Proposed Project will align human resource policies within the organisation	Risk accepted No mitigation steps identified
Existing Negative Influence	A change implementation strategy has not been identified as one of the deliverables of the project	A change manager must be appointed to the project
Missing Positive Influence	The organisation IT and BPR project execution business units are aligned	The project board has to include a senior member from the IT project execution business unit
Existing Negative Influence	Organisation does not have stable and standardised tools for business process analysis and design	Risk accepted – No mitigation steps identified
Missing Positive Influence	Organisation Functions/ Operations Structure is not planned for change during the execution of the proposed project	Risk accepted No mitigation steps identified
Missing Positive Influence	Organisation has a strong relationship with all identified delivery partner/vendor	Risk accepted No mitigation steps identified
Existing Negative Influence	Organisation does not have a formal Business Process Management (BPM) structure in place	Risk accepted No mitigation steps identified
Existing Negative Influence	Multiple point of accountability and decision making will be applied on the proposed project	Project board chairman should be the executive manager heading up all contact centre operations
Missing Positive Influence	Organisation is eager to invest in large BPR type projects	The current investment committee to implement a process for fund allocations to BPR initiatives.
Missing Positive Influence	Proposed project Business Process Reengineering approach is aligned to the organisation's acceptance of change. (Radical or Incremental)	Risk accepted No mitigation steps identified

Statement Description	BPOIS Statement	Feasible Mitigation Steps
Existing Negative Influence	Organisation leadership external to the project can influence the project outcome	Project board chairman should be the executive manager heading up all contact centre operations Project to manage key influential stakeholders on a weekly one on one feedback engagement session

Activity 5.2 Prioritise Implementation of Mitigation Steps

Following on from Activity 5.1, the next activity, Activity 5.2, is aimed at prioritising the mitigation steps for implementation. This will be achieved by applying the BPR Project Success Probability Chart. This chart was created by citing the principle of the Standish Group, 1995, namely, the Success Potential Chart. The Standish Group, 1995, Success Potential Chart had points allocated to each success influential factor that was identified as part of that research. Points were allocated based on most influential to least influential as they were numerically ranked from 1 to 10. The points totalled 100 and ranged from 19 points for number 1 to 3 points for number 10. These principles were used to create the BPR project Success Probability Chart.

As previously indicated there were 6 BPR project influential categories that was worked with when the cross case analysis was conducted (b/f Section 4.9). These categories, were Project Management, Change Management, Information Technology, Management Support, Organisational Behaviour and Organisational Structure and were classified in terms of relative importance and impact towards influencing the success of a BPR project outcome (b/f Section 4.9). This information was used in the following approach to determine the points for each statement covered by the BPOIS model:

- Category points were allocated by taking 100 points and distributing the points based on a numerical weighting of 1 to 3, where a weighting of 3 was allocated points of 100/12*3 and a weighting of 1 was allocated points of 100/12*1
- Organisational Structure and Organisational Behaviour as categories were given 25 points each as they were classified as the most relevant.
- Project Management and Change Management were given 16.66 points each as they were classified second most relevant.
- Information Technology and Management support were given 8.33 points as they were classified least relevant.
- Each category statement was then evenly allocated points based on their category allocation. The reason is that in order to attain the full category points all positive statements have to be achieved and or all negative statement potential risks have to be mitigated.

The BPR Project Success Probability Chart can be used to:

- Calculate success probability prior to any mitigation steps being implemented
    - Allocate points to any statement row not marked with a tick or a cross.
    - Calculate the sum of all points to get the success probability.
- Prioritise mitigation steps by taking into account the category and the associated statement row points:
    - Points per statement row determine the impact on the project success probability. This is the same for the category.
    - As a principle the category points determine priority and the row statement points determine influence on success probability. (This is due to the nature of the case study analysis results (b/f Section 4.9))

- Calculate success probability post mitigation step identification and post mitigation step implementation:
    - Allocate points to any statement row not marked with a tick or a cross
    - Allocate points to any statement row where mitigation step has been identified for implementation and or has been implemented
    - Calculate sum of all points, to get the success probability

The above three uses will be illustrated as part of the continuation of the example.

The BPR Project Success Probability Chart is depicted by Figure 6.13.

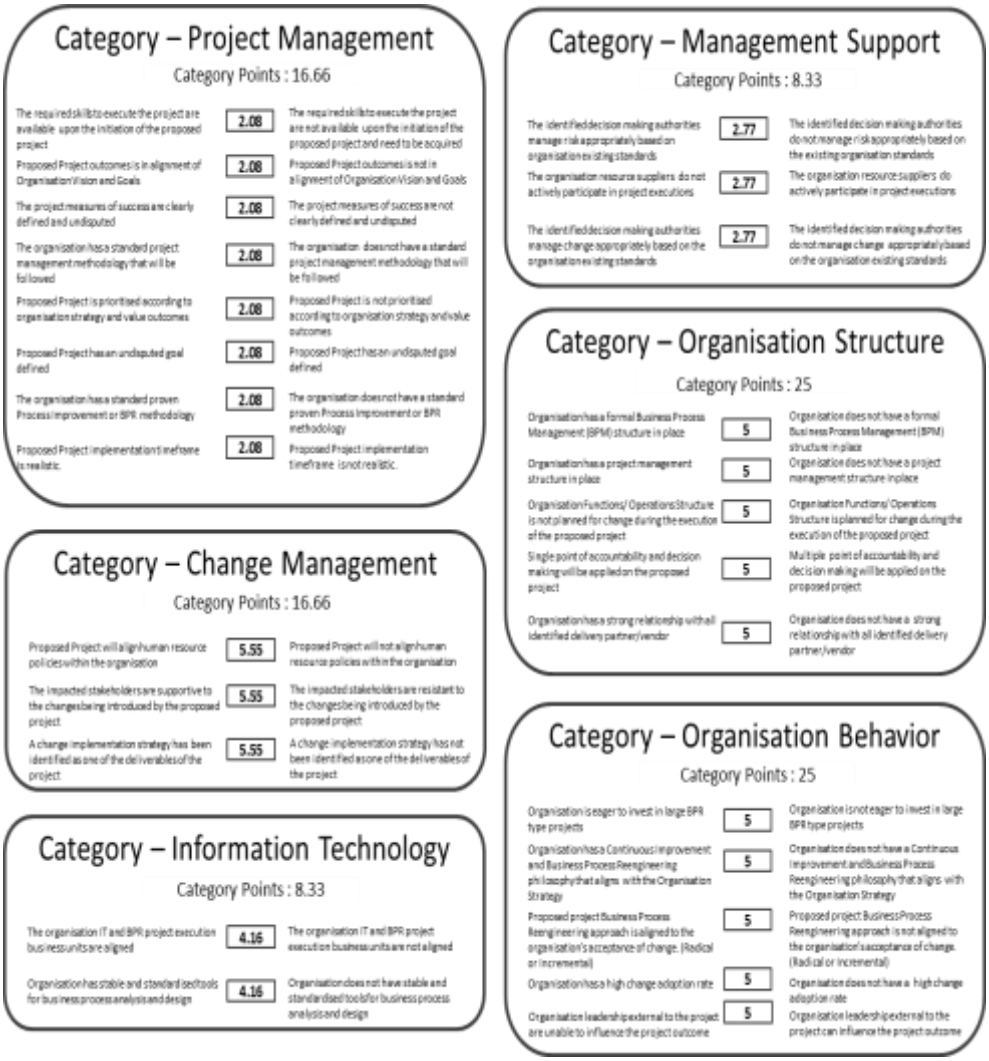


Figure 6.13: BPR Project Success Probability Chart

Figure 6.14 depicts the success probability prior to any mitigation being identified, as we continue with the example and P^2OE^2M model application illustration.

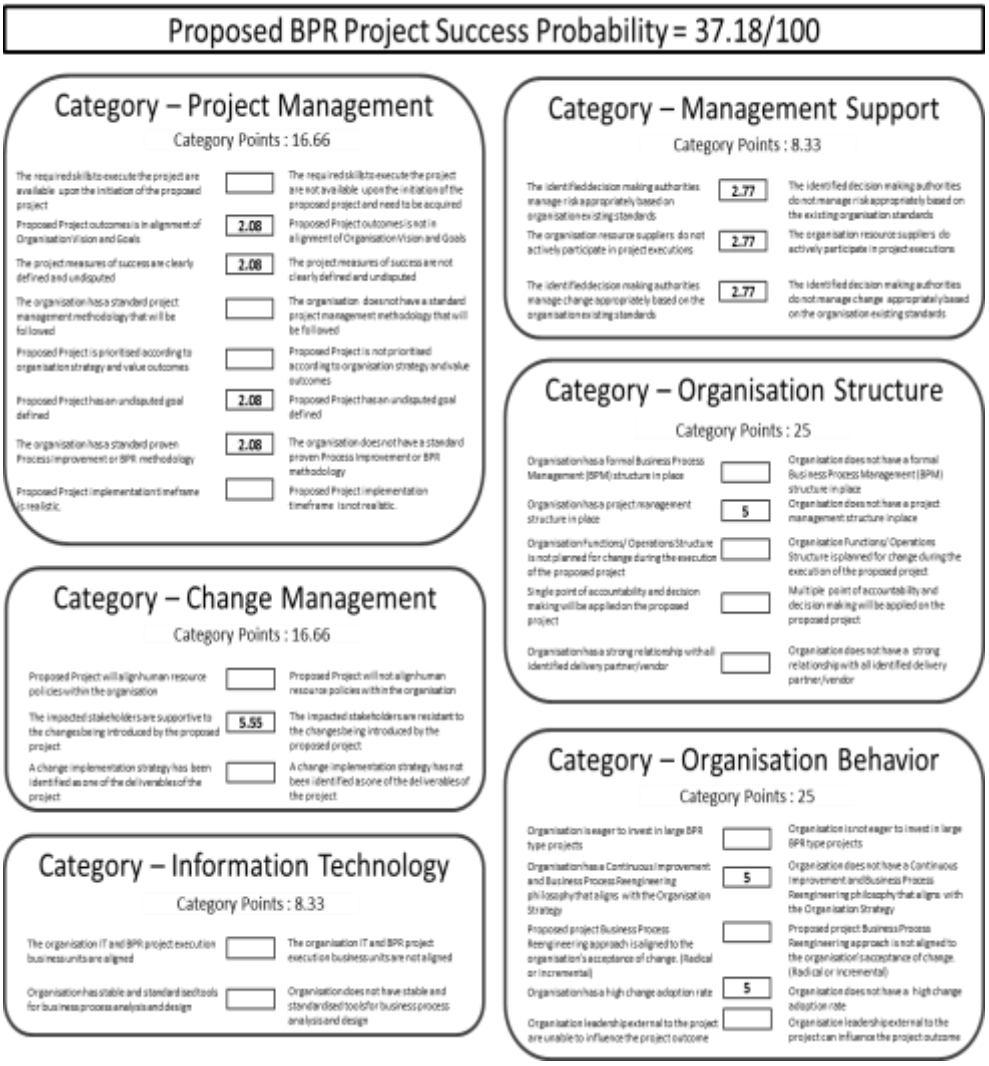


Figure 6.14: Example BPR Project Success Probability Score Pre Mitigation Identification

Table 6.5 depicts the priority of the mitigation steps.

Table 6.5: Example Mitigation Step Implementation Priority

Statement Description	BPOIS Statement	Feasible Mitigation Steps	Implementation Priority
Missing Positive Influence	Proposed Project is prioritised according to organisation strategy and value outcomes	Proposed project to be presented at the investment committee for prioritisation	2
Existing Negative Influence	The required skills to execute the project are not available upon the initiation of the proposed project and need to be acquired	Engage with Vendor prior to project initiation to secure a contract for a Business Process Engineer	2
Existing Negative Influence	The organisation does not have a standard project management methodology that will be followed	A senior project manager must be assigned to the BPR proposed project	2
Existing Negative Influence	Proposed Project implementation timeframe is not realistic.	A full estimate of the BPR proposed project should be conducted and presented at the project board for acceptance once project is initiated and the scope of work is clearly understood	2

Statement Description	BPOIS Statement	Feasible Mitigation Steps	Implementation Priority
Existing Negative Influence	A change implementation strategy has not been identified as one of the deliverables of the project	A change manager must be appointed to the project	2
Missing Positive Influence	The organisation IT and BPR project execution business units are aligned	The project board has to include a senior member from the IT project execution business unit	3
Existing Negative Influence	Multiple point of accountability and decision making will be applied on the proposed project	Project board chairman should be the executive manager heading up all contact centre operations	1
Missing Positive Influence	Organisation is eager to invest in large BPR type projects	The current investment committee to implement a process for fund allocations to BPR initiatives.	1
Existing Negative Influence	Organisation leadership external to the project can influence the project outcome	Project board chairman should be the executive manager heading up all contact centre operations Project to manage key influential stakeholders on a weekly one-on-one feedback engagement session	1 1

Figure 6.15 depicts the success probability if all feasible mitigation steps were to be implemented.

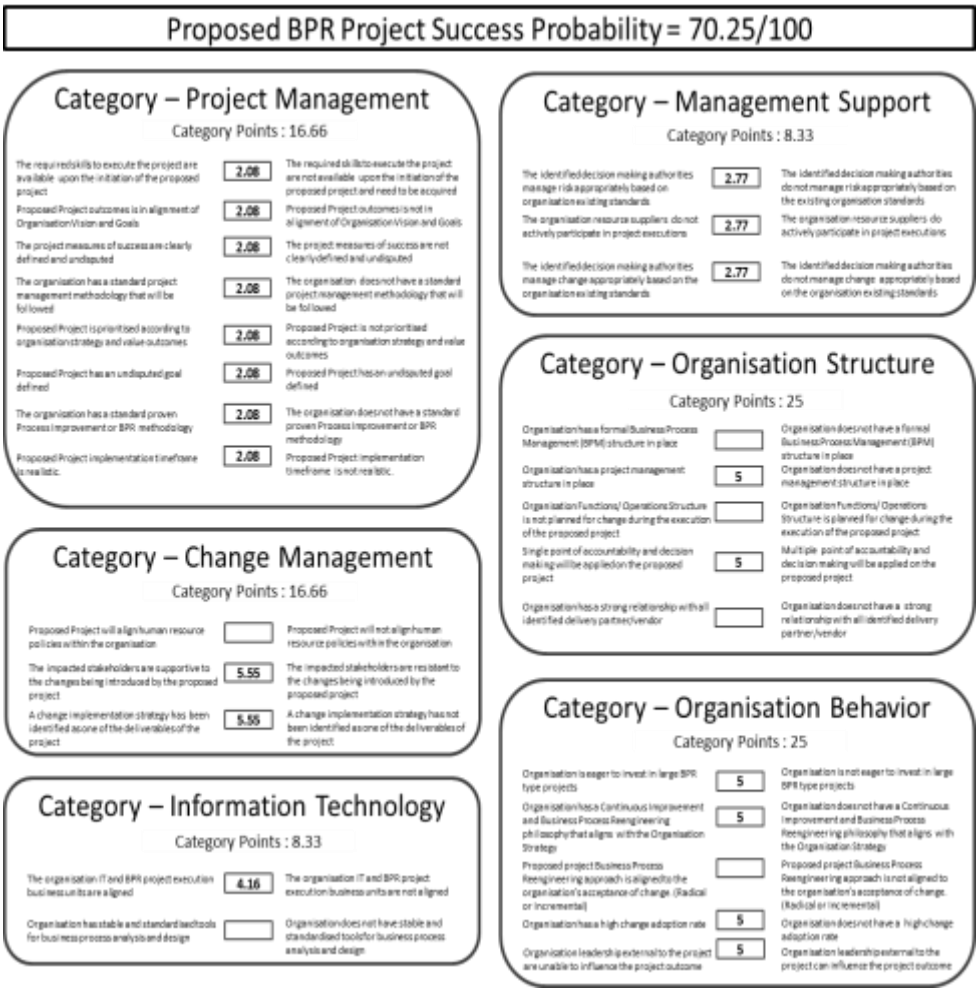


Figure 6.15: Example Proposed BPR Project Success Probability Score if Mitigation Steps Were Implemented

Activity 5.3 Action Organisation Mitigation Steps

Activity 5.3 is fairly straightforward and requires the identification of pre project and or organisational type mitigation steps. Once these have been identified, they would need to be implemented. Unlike various other phases and activities described and illustrated previously, there is no framework, template and or model that needs to be followed to produce the output.

The following approach or sequence of sub activities is suggested towards aiding the completion of Activity 5.3 and ultimately ending Phase 5 and its activities:

- Identify pre project / organisational actionable mitigation steps.
- Draw up an action plan to implement the mitigation steps.
- Execute the action plan before the proposed BPR project being initiated.

Table 6.6 continues our example illustration and presents a view on the action plan output of activity 5.3.

Table 6.6: Example Action Plan to Implement Pre Project Organisational Mitigation Steps

Statement Description	BPOIS Statement	Feasible Mitigation Steps	Implementation Priority	Assigned Owner	Implementation Due Date
Missing Positive Influence	Proposed Project is prioritised according to organisation strategy and value outcomes	Proposed project to be presented at the investment committee for prioritisation	2	Project Sponsor	YYYY/MM/DD
Existing Negative Influence	The required skills to execute the project are not available upon the initiation of the proposed project and need to be acquired	Engage with Vendor prior to project initiation to secure a contract for a Business Process Engineer	2	Project Sponsor	YYYY/MM/DD
Existing Negative Influence	The organisation does not have a standard project management methodology that will be followed	A senior project manager must be assigned to the BPR proposed project	2	PMO Head	YYYY/MM/DD
Missing Positive Influence	Organisation is eager to invest in large BPR type projects	The current investment committee to implement a process for fund allocations to BPR initiatives.	1	Investment Committee Chairman	YYYY/MM/DD

The last phase of the P^2OE^2M model, Phase 6, Project Transfer will be described and illustrated next.

6.3.2.6 Project Transfer

The execution of Phase 6 marks the end of the P^2OE^2M model. It only has a single activity, Activity 6.1 Transfer Project Actionable Mitigation Steps to Project for Implementation, and it is very similar to Activity 5.3 barring two aspects. Firstly, no implementation of mitigation steps occurs as part of this phase. Secondly, the mitigation steps required to be executed by the project once executed are documented and transferred to the project upon project initiation. Figure 6.16 depicts the activity for Phase 6.

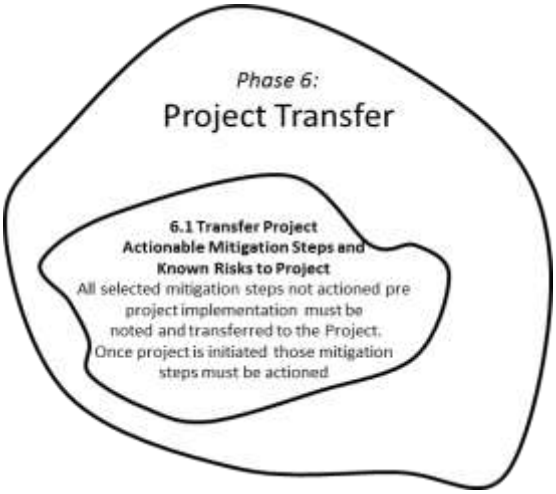


Figure 6.16: P²OE²M Model Phase 6 Activity

Activity 6.1 Transfer Project Actionable Mitigation Steps and Known Risks to Project

Activity 6.1 as mentioned above is very similar to Activity 5.3, however, it does have different outcomes. These outcomes are twofold. The first outcome is to identify and document all prioritised mitigation steps not actioned in Phase 5. These can be transferred to the proposed project. The second outcome is to document all known negative influences and missing positive influences not mitigated, which will also be transferred to the project.

The suggested approach for completion of Activity 6.1 is as follows:

- Any mitigation step not actioned that was identified and prioritised should be documented and transferred to the project upon its initiation with the aim that the project will action and implement accordingly.
- Any negative influence or missing positive influence should be noted as accepted risks and transferred to the project upon initiation for impact monitoring and control.

To finalise our example illustration, two tables were created. Table 6.7 depicts the first outcome of Phase 6, the documented mitigation steps that need to be actioned as part of the project; and Table 6.8 depicts the second outcome of Phase 6, the documented negative influences and missing positive influences that were accepted as risks.

Table 6.7: Example Mitigation Steps to Be Transferred to Project

Statement Description	BPOIS Statement	Feasible Mitigation Steps	Implementation Priority
Existing Negative Influence	Proposed Project implementation timeframe is not realistic.	A full estimate of the BPR proposed project should be conducted and presented at the project board for acceptance once the project is initiated and the scope of work is clearly understood	2
Existing Negative Influence	A change implementation strategy has not been identified as one of the deliverables of the project	A change manager must be appointed to the project	2

Statement Description	BPOIS Statement	Feasible Mitigation Steps	Implementation Priority
Missing Positive Influence	The organisation IT and BPR project execution business units are aligned	The project board has to include a senior member from the IT project execution business unit	3
Existing Negative Influence	Multiple point of accountability and decision making will be applied on the proposed project	Project board chairman should be the executive manager heading up all contact centre operations	1
Existing Negative Influence	Organisation leadership external to the project can influence the project outcome	Project board chairman should be the executive manager heading up all contact centre operations Project to manage key influential stakeholders on a weekly one-on-one feedback engagement session	1 1

Table 6.8: Example Accepted Risks Transferred to Project

Statement Description	BPOIS Statement	Feasible Mitigation Steps
Missing Positive Influence	Proposed Project will align human resource policies within the organisation	Risk accepted No mitigation steps identified
Existing Negative Influence	Organisation does not have stable and standardised tools for business process analysis and design	Risk accepted – No mitigation steps identified
Missing Positive Influence	Organisation Functions/ Operations Structure is not planned for change during the execution of the proposed project	Risk accepted No mitigation steps identified
Missing Positive Influence	Organisation has a strong relationship with all identified delivery partner/vendor	Risk accepted No mitigation steps identified
Existing Negative Influence	Organisation does not have a formal Business Process Management (BPM) structure in place	Risk accepted No mitigation steps identified
Missing Positive Influence	Proposed project Business Process Reengineering approach is aligned to the organisation's acceptance of change. (Radical or Incremental)	Risk accepted No mitigation steps identified

The next section will provide a summary of the phases that were described and illustrated.

6.4 Summary

Chapter 6 was dedicated to describing the BPR management approach derived by the researcher. It is aimed at improving the success probability of an executed BPR project. The P^2OE^2M model is the dominating output of the research and fulfils the purpose of deriving a fit for purpose management approach that would guide project leaders in executing their projects within their organisational environments successfully (b/f Section 3.1).

The P^2OE^2M model as represented by Figure 6.17 is made up of six phases, with each phase having specific activities that need to be performed. These phases and their associated activities are:

- Phase 1, Goal Definition
  - Activity 1.1, Apply PQR
  - Activity 1.2, Apply CATWOE
  - Activity 1.3, Combine PQR and CATWOE
- Phase 2, Organisation Context Creation
  - Activity 2.1, Identify "Who" and "What"
  - Activity 2.2, Document Organisation Context

- Phase 3, Negative Influence Identification
    - Activity 3.1, Compare Organisation Context Diagram
        - Step 3.1 a, Note all Negative Influences
        - Step 3.1 b, Note Missing Positive Influence Elements
- Phase 4, Mitigation Identification
    - Activity 4.1, Host One Day Workshop
- Phase 5, Focused Mitigation
    - Activity 5.1, Refine Mitigation Steps
    - Activity 5.2, Prioritise Implementation of Mitigation Steps
    - Activity 5.3, Action Organisation Mitigation Steps
- Phase 6, Project Transfer
    - Activity 6.1, Transfer Project Actionable Mitigation Steps and Known Risks to Project

By performing these activities, the user will be able to identify negative project influences as well as missing positive influences and will be able to take mitigation steps in order to improve the success of the BPR project being proposed.

In proposing the P^2OE^2M model, the researcher developed two specific components for use. The first component can be seen in Phase 3, Negative Influence Identification, and is termed the BPOIS model. This model is based on combining prior researched and current researched outcomes in terms of BPR project influential factors. It assists the user in understanding what factors are required within the organisation environment and the project itself in order to improve its success probability.

The second component developed by the researcher is the BPR Project Success Probability Chart. This chart is based on the principles used to develop the Standish Group, 1995, Success Potential Chart, which is found in Phase 5 of the P^2OE^2M Model. As mentioned previously (b/f Section 6.3.2.5) it aids the user in the following three ways:

- Calculate success probability prior to any mitigation steps being implemented.
- Prioritise mitigations steps by taking into account the category and the associated statement row points.
- Calculate success probability post mitigation step identification and post mitigation step implementation.

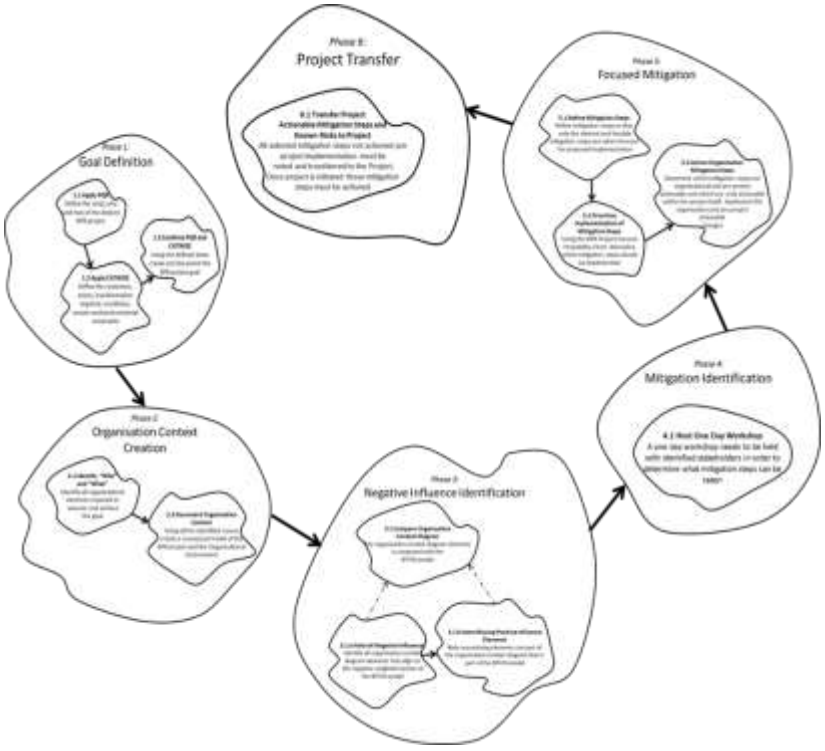


Figure 6.17: P²OE²M Model Phases and Activities

It is worth noting at this point that the research also culminated in the development of the ORoI model (b/f Section 4.9.2). In fulfilment of the research purpose the following components that were developed by the research can be noted and highlighted;

- The ORoI model
- The P²OE²M model
    - The BPOIS Model
    - The BPR Project Success Probability Chart

The researcher will now move towards concluding the research. This conclusion will cover a summary of the research contribution to knowledge, the limitations of the limitations, future work considerations and feedback received from published articles and a presentation.

7 Conclusion, Limitations and Future Research

This purpose of this chapter is to provide bring together all the elements of the research into a discussion of how the research question was answered. Further to this point, the discussions will also focus on the contributions to knowledge and practice made by the researcher as well as avenues for further research.

7.1 Introduction

The research purpose was to derive a fit-for-purpose management approach that could guide project leaders to successfully execute their projects within their organisational environments (b/f Section 3.1). The purpose aligns itself to the age-old search of discovering why projects of any nature fail. It has been stated in the research that currently the rate of failed BPR projects out rank that of successfully executed BPR projects (b/f Chapter 1).

Various research endeavours had tried to provide solutions for the successful execution of BPR projects, based on certain project influential factors propounded by these research endeavours. It was found, however, that these research endeavours focused mainly on the BPR project itself and gave very little credence to the environment within which these projects were being executed. In addition, prior research did not consider the impact of uncertainty and continuous change experienced by today's organisations (b/f Chapter 2). This was a gap that was highlighted as part of the research presented in this thesis.

The researcher further noted that current BPR project execution methodologies, which were being hailed as the answers to organisational success, were not living up to their promises. The banking services industry in South Africa was a particular case in point. Banks in South Africa adopted Six Sigma and Lean in order to improve their business operations but were met with more failures than successes (b/f Chapter 1).

In reviewing the literature associated with methodologies, such as Six Sigma, Lean, Theory of Constraints and BPR methods, it was found that most of the methods did not consider the execution environment by outlining their associated execution method or framework. Prior research into BPR approaches also found gaps in the field of BPR research related to the organisation's environment and its readiness for BPR and it suggested further empirical research be undertaken in this space (Hussein, et al., 2013) (Hussain, et al., 2014).

Literature by Furterer, 2009, and Manganelli and Klein, 1994 provided frameworks as a means of institutionalising a culture suitable for the execution of successful BPR projects. These frameworks, unfortunately, were suggested to run for numerous years before institutionalisation of the right culture would have been entrenched. In today's rapidly changing world, needing many years to institutionalise a culture is a luxury that most organisations can ill afford. Organisations are very fluid and dynamic in nature, which means that a more relevant and appropriate framework that could be implemented in a much shorter timeframe would be suitable in our current frame of reference, which is a fast paced and ever changing world.

The researcher noted the gaps stated above and set out to fulfil the purpose of the research by asking the following question (b/f Section 3.2):

"How should a BPR project be executed within a financial service company to achieve an appropriate balance of the critical success factors?"

The central question was not enough to guide the research and further supporting questions were formulated to close the aforementioned gaps. The following supporting questions were asked:

a) Has prior research identified all relevant project influential factors? If not, what are the other relevant project influential factors?
b) Which project influential factors are more relevant or important to the successful outcome of a BPR project?
c) How can the prevalence of the applicable BPR project influential factors be determined?
d) What is required in order to enable and prioritise highly relevant and important BPR project influential factors that would lead to a successful outcome?
e) How do the above integrate with current BPR project methodologies?

The next sections will highlight how the research findings answered the questions by leading into a discussion of the contribution to knowledge made in the areas of theory, practice and methodology. In addition, the researcher will reflect on review exercises that were conducted as part of maintaining research validity followed by the limitations of the research, recommendations for future work and concluding remarks.

7.2 Research Findings

As narrated in the paragraph above, the next few paragraphs will look at the results of the research and how the results of the research answered the research question. Furthermore, in answering the research question the Researcher ultimately fulfilled the purpose of the research as well.

The research purpose, as stated previously, was to derive a fit-for-purpose management approach that would guide project leaders in executing their projects within their organisational environments successfully. The fulfilment of the research purpose was supported by the central guiding question, which was further supported by secondary questions.

Consequently; in order to fulfil the research purpose by answering the above questions, the researcher embarked on a journey that started with a pilot case study and literature review. The literature review helped solidify the need for the research by highlighting gaps in the management approaches applied to executing BPR projects (b/f Chapter 2). These gaps related to the focus of recent research endeavours and suggested avenues for further research (b/f Chapter 2). This approach was key in finding the answers to the first question; "*a) Has prior research identified all project influential factors? If not, what are the other project influential factors?"* By consolidating prior research findings and combining the output with the case study analysis, where each BPR project or unit of analysis was analysed, a few new findings emerged.

A model was presented that integrated existing factors and the researcher's contribution to reflect on the relationship and impact an organisations environment has on executing successful BPR projects. This was presented in the form of the ORoI model (b/f Chapter 4). The research revealed that organisational behaviours and structures played a major influential role in the outcome of an executed BPR project and that these factors resided outside the technical domain of the project itself.

The above revelation was followed by highlighting which project influential factors were considered as most influential when compared to others. This insight came about by applying the fsQCA case study analysis technique (b/f Chapter 4) and

provided the answers to the second supporting question; *b) Which project influential factors are more relevant or important to the successful outcome of a BPR project?* The fsQCA analysis revealed that organisational behaviour and structure factors were most influential. This was followed by factors such as Project Management and Change Management, which in turn was followed by the lowest level influential factors such as IT and Management Support.

Combining this knowledge with the work of Checkland's, 1999, SSM (b/f Chapter 5) and Meadow's, 2008, System Leverage Points (b/f Chapter 5) the researcher developed the P^2OE^2M model (b/f Chapter 6). This model fulfilled the purpose of the research and provided the answer to the central question. The answer to the central question is to:

"Apply a management approach pre project initiation in order to contextualise and understand what factors will critically influence the project's success. Apply mitigation steps to the prioritised negative influences and missing positive BPR project influential factors, thereby improving the probability of the proposed projects success."

The management approach that was developed was the P^2OE^2M model and it provided a unique approach in aiding the execution of successful BPR projects within a financial setting, thereby improving the success rate of executed BPR projects. The P^2OE^2M model as represented by Figure 37 (b/f Chapter 6) is made up of six Phases, with each phase having specific activities that need to be performed.

The phases of the P^2OE^2M model and their associated activities are:

- Phase 1, Goal Definition
  - Activity 1.1, Apply PQR
  - Activity 1.2, Apply CATWOE
  - Activity 1.3, Combine PQR and CATWOE
- Phase 2, Organisation Context Creation
  - Activity 2.1, Identify "Who" and "What"
  - Activity 2.2, Document Organisation Context
- Phase 3, Negative Influence Identification
  - Activity 3.1, Compare Organisation Context Diagram
    - Step 3.1 a, Note all Negative Influences
    - Step 3.1 b, Note Missing Positive Influence Elements
- Phase 4, Mitigation Identification
  - Activity 4.1, Host One Day Workshop
- Phase 5, Focused Mitigation
  - Activity 5.1, Refine Mitigation Steps
  - Activity 5.2, Prioritise Implementation of Mitigation Steps
  - Activity 5.3, Action Organisation Mitigation Steps
- Phase 6, Project Transfer
  - Activity 6.1, Transfer Project Actionable Mitigation Steps and Known Risks to Project

Phase 2 of the P^2OE^2M model covers answers to the supporting question, "*c) How can the prevalence of the applicable BPR project influential factors be determined?"*

Phases 3 to 5 partially answer the supporting question, " *d) What is required in order to enable and prioritise highly relevant and important BPR project influential factors that lead to a successful outcome?"* The reason for partially answering the question lies in the mitigation identification. This is based on real world interaction

and any number of possibilities could exist for which the research would be ill equipped to cater. It does, however, help to identify the mitigations that are required.

Phase 6 caters for the supporting question, "*e) How do the above integrate with current BPR project methodologies?"* The integration point lies between the end of the P^2OE^2M model and the beginning phase of any adopted BPR execution methodology. A handover of information occurs at this point to ensure sustained focus is placed on risks identified by the work carried out in the P^2OE^2M model.

Having now covered the findings of the research and posited how the method facilitated the formation of the findings to answer the research questions, focus can be placed on the contribution avenues of the research. This is covered next.

7.3 Theoretical Contribution

The theoretical contributions discussed in this section are based on the literature reviews conducted and the research results.

Firstly, if one looks at prior research conducted to understand which factors influence the success of a BPR project, the research found that the presence of line management support was actually a negative factor and might contribute towards BPR project failure. This is in direct contradiction with existing theory as suggested by Den Hengst & de Vrede, 2004, and David, 2008. However, this could be attributed to management competence and the type of leadership, as prior research suggested that there was a link between organisation and employee perfomance and management competence and leadership style (Edward & Mbohwa, 2013) (Sorsatakaro & Wako, 2014). Further research into understanding management styles and management competence levels and their relationship to BPR implementations could provide more understanding.

Secondly, keeping the focus on BPR project influential factors, the research added to the list of factors that was known and made known by prior research. The following BPR project influential factors were identified through the research presented in this thesis:

- Organisation Functions/ Operations Structure was stable during the execution of the project.
- Single point of accountability and decision making was applied on the project (inherent within organisation management structures).
- Executive Sponsor for the project remained stable.

The third theoretical contribution could be seen as an advancement of the identification of new project influential factors and not a new contribution, however, the researcher argues that the ORoI model that was developed is an additional theoretical contribution and advances the knowledge of understanding which organisational type factors critically influence the outcome of an executed BPR project. The model was also created by classifying the project influential factors in terms of their relevance and influential impact, as was discovered by applying the fsQCA technique. This is supported by Hussain et al., 2014, in their recommendation for future research to understand the criticality of change management and the capability of organisations to absorb the demand for change.

It was noted that current theory did not address the relative importance of related factors on the effect of the outcome of a BPR project within an empirical setting (b/f Chapter 2). Employing the fsQCA technique for the cross case analysis assisted in classifying the relative importance of BPR project influential factor categories to each other. It was found that organisational behaviour and structure categories

were most influential, followed by project and change management. Least influential were the categories management support and information technology.

(NB: The above noted theoretical contributions was accepted for publishing in the South African Journal of Industrial Engineering on the 13 February 2016 (ISSN 2224-7890 (on-line); ISSN 1012-277X (print)).)

7.4 Practice Contribution

Moving to the P^2OE^2M model developed by the researcher, in order to answer the questions and fulfil the purpose of the research, the researcher quotes Bashein et al. (in Sethi and King, 1998).

"Obviously, more research is needed to support confident recommendations for action".

Bashein et al. (in Sethi and King, 1998), put forward the need for an approach that would identify organisational influences on projects and would mitigate them prior to the initiation and execution of any BPR initiatives. This is further supported by Hussain et al., 2014. They recommended further avenues of research, in particular, identifying those factors that negatively contribute towards an organisation's readiness for BPR. This need was advanced by the research and the result was the P^2OE^2M model. The P^2OE^2M model is a unique approach developed by combining the thinking and work of Checkland, 1999, and Meadows, 2008, and the results of the cross case study analysis. The P^2OE^2M model is argued as a valuable contribution to the practice of BPR project execution methodologies.

Having outlined the theoretical contributions of the research, the further contribution of knowledge relating to the research methodology is discussed next.

7.5 Methodological Contribution

In defining the methodology for the research, the researcher adapted Yin's, 2009, approach (b/f Chapter 3). The researcher elected to start the process of a case study analysis by defining the research purpose instead of developing a theory. This approach was supported by Cresswell, 2009 and Yin, 2009, when they suggested that not all case studies might require propositions, hypothesis or theories and that the purpose of the research may suffice in their place.

Further to the above contribution towards case study research methodology practices, as they relate to the application of the research purpose, the researcher found himself in a dilemma of selecting the appropriate "cross case synthesis" (Yin, 2009) or cross case analysis technique. This dilemma of selecting an appropriate, robust and proven way of conducting a qualitative analysis of aggregated findings led to the adoption of the QCA cross case analysis technique. Ragin and Rihoux, 2009, mentioned the QCA technique and its five uses in the book "Configurational Comparative Methods, Qualitative Comparative Analysis (QCA) and Related Techniques". QCA can be used to summarise data, check coherence of data, check hypotheses or existing theories, conduct a quick test for conjecture and facilitate the development of new theoretical arguments (Rihoux & Ragin, 2009).

The uses that most aligned with the research was that of developing new theoretical arguments and tests for conjecture. A nuance of the QCA technique, namely, fsQCA was intertwined into Yin's, 2009, suggested approach. A framework for applying fsQCA was developed (b/f Section 3.5.6) to ensure that the research methodology was robust and catered for the research needs. This

framework and further adaptation of Yin's, 2009, approach adds to the contribution of case study methodologies.

This brings us to the end of the discussions on knowledge contribution. The next section will reflect on the exercises that were conducted to strengthen the validity of the research.

7.6 Reflections on Research Validity Reviews

In support of the validation work suggested by section 3.6 it was important to ascertain the validity of the research by employing techniques that would involve reviews of the research and its results. As mentioned above articles were published on the www.BPMInstitute.org website domain (see Appendix O) where feedback was received. In addition, a presentation (see Appendix M) was held to a particular group of participants, including practitioners and academics, (see Appendix L), whereby feedback was obtained (see Appendix K). This section will cover the feedback received on both the published articles and the presentation.

In terms of the feedback received on the published articles, the majority of the comments suggested that the organisational behaviours and structures represented by the ORoI model were indeed a new way of looking at why BPR projects failed. Words such as; "*key insights", "new wave of thinking about BPR" and "new way of thinking"* (see Appendix O) are suggestive of knowledge addition to the BPR domain. It also affirmed the research need. One comment, however, (not contradictory to the research), suggested that an alternate way of looking at executing BPR projects is by considering a BPR project as a *"micro organisation"* in its own right. By doing that the BPR project would be a *"supplier"* to the organisation. This could be an alternate way of looking at a BPR project, but it was not considered by the researcher.

Moving forward to the presentation, which focused on the results of the research namely the P^2OE^2M and the ORoI models, feedback was mostly positive in terms of the contribution to knowledge and practice to the BPR project community and domain (see Appendix K). Participants were selected for their practical and academic exposure to BPR type projects. This was important in order to establish credibility and validity to the research. Comments that were made included:

"This approach and the application of the model is in the right direction for the empowerment of the project managers…"

"There is a strong need for a pre project/program evaluation on the socio-political factors that inhibit the potential success of an initiative."

"…something we could apply to engage our clients at project initiation…"

The comments received during the presentation suggest that the P^2OE^2M model does contribute to the practice of BPR project executions and that it has a high degree for practical applications.

In addition to the positive comments received on both the published articles and the presentation feedback, comments were received regarding the expansion of the P^2OE^2M model. This will be covered in a latter section where we look at future work recommendations. Next a discussion on the limitations of the research will be covered.

7.7 Limitations of Research

The research presented in this thesis focused on executing BPR projects within a specific industry, specific geography and using specific process improvement methodologies. The key word 'specific' advances limitations related to the proposed research.

Firstly, the research presented in this thesis did not focus on all service industries and would therefore not advance any generic outcomes that might add value to all service type industries. This is a limitation on the generalisability of the research. As the research was conducted within a financial institution and any outcomes will be advanced for use within that industry only.

Secondly, the selected organisation, termed as the Bank in this thesis, is **S**outh **A**frican (SA) based, with a global presence. Every effort was made to select projects that span globally; failing which only SA executed BPR projects were selected. This is not a major limitation as financial industries globally make available financial services that are similar, if not equal, in nature and differences may exist in culture and organisational structures.

The primary limitation was that the research presented in this thesis was exposed to only two process improvement methodologies and their respective variants, namely, Six Sigma, Lean Engineering, Six Sigma for Service, Lean for Service and Lean Six Sigma. This is an important limitation to note as the outcome of the research should not duplicate other process improvement methodologies. To overcome this limitation and to add credibility to the research, a considerate effort was made to include literature on alternate process improvement or reengineering methodologies such as Theory of Constraints.

7.8 Recommendations for Future Research

Even though the researcher considers the research presented in this thesis as completed in that it has answered the research question and fulfilled the purpose of the research, there are some considerations and recommendations that need to be brought forward as items for future work.

The first item is to test the effectiveness of the P^2OE^2M model to improve the success rate of a BPR project or initiative. Remember that the P^2OE^2M model is a suggested management approach, that if applied would improve the success rate of a BPR project or initiative. This piece of work would be recommended as the first item to consider for a post-doctoral study spinning of the research presented in this thesis.

The second item for recommendation is that of applicability and generalisability of the P^2OE^2M and ORoI models. The research was limited in terms of scope to the domain of executed BPR projects or initiatives within a financial institution setting. A worthwhile endeavour would be to prove the P^2OE^2M and ORoI model applicable to other types of project domains like IT projects. This would in turn generalise the findings of the research presented in this thesis. This item was a common item that was suggested by feedback comments received on the published articles and presentation.

Relaying back to the comments on the presentation, a third item for consideration was brought forward when a question was asked by one of the presentation participants on the inclusion and or integration to process maturity models such as CMMI. This thinking was not part of the research and was not suggested as having to be answered to fulfil the purpose of the research, however, the researcher would consider this as a piece of work to be carried out in the future.

Further to the process maturity integration comment a suggestion was made by one of the presentation participants to expand the P^2OE^2M model so that it would be collaborative instead of prescriptive. The question arises as to how the P^2OE^2M model can be integrated into existing organisation BPR project execution processes. Are all the elements prescriptive in terms of execution and sequencing or can certain phases and or activities be modified, excluded or re-sequenced in order to align to the organisations needs and current processes? This question and the answering thereof are recommended as a future research development.

The above recommendations are not meant to be exhaustive, but do represent what the researcher contemplates to be future work developments. A few concluding remarks follows next.

7.9 Concluding Remarks

In attaining the understanding of why BPR projects fail, numerous prior researches uncovered project influential factors in negative and positive forms. The majority focus however has been to look at BPR projects in isolation of the execution environment, which is the organisation for which the projects are being executed. The research presented in this thesis aims at closing this gap and has shown that the organisation also plays a critical part in influencing a BPR projects outcome by virtue of the organisations culture, behaviour and fluidity in structures.

Furthermore, in aiming to improve the success rate of executed BPR projects, a model was therefore derived to offer a unique approach that will facilitate the understanding of project influential factors prior to the execution of a BPR project, while facilitating the enablement of an environment conducive to executing a successful BPR project.

References

Abdi, N., Zarei, B., Vaisy, J. & Parvin, B., 2011. Innovation Models and Business Process Redesign. *International Business and Management,* 3(2), pp. 147-152.

Abdul Kader (Business Politics), I., 2013. *BPMInstitute.* [Online] Available at: http://www.bpminstitute.org/resources/articles/business-politics-projects-success-games-executives-play
[Accessed 16 September 2013].

Abdul Kader (Organisational Structures), I., 2013. *BPMInstitute.* [Online] Available at: http://www.bpminstitute.org/resources/articles/organization-structures-does-it-impact-project-success
[Accessed 16 September 2013].

Abdul Kader (ORoI), I., 2013. *www.BPMInstitute.org.* [Online] Available at: http://www.bpminstitute.org/resources/articles/organisation-ring-influence
[Accessed 14 January 2014].

Ackoff, R., 1995. *Systems Based Improvement with Russell Ackoff.* [Online] Available at: http://www.systemswiki.org/index.php?title=Systems_Based_Improvement_with_Russell_Ackoff
[Accessed 23 March 2012].

Alas, R., Zernand-Vilson, M. & Vadi, M., 2012. *Management techniques in Estonian organizations: learning organization and business process reengineering.* Estonia, Elsevier Ltd..

Alghamdi, H. A., Alfarhan, M. A. & AL-Ghamdi, A. A.-M., 2014. BPR: Evaluation of Existing Methodologies and Limitations. *International Journal of Computer Trends and Technology,* 7(4), pp. 224-227.

Allen, M. et al., 2014. A Framework for Project Success. *Journal of IT and Economic Development ,* 5(2), pp. 1-17.

Al-Mashari, M. & Zairi, M., 1999. BPR implementation process: an analysis of key success and failure factors. *Business Process Management Journal,* 5(1), pp. 87-112.

Amponsah, R., 2012. *The Real Project Failure Factors and the Effect of Culture on Project Management in Ghana ,* Dakar: Investment Climate and Business Environment Research Fund.

Arabzad, M. S. & Shirouyehzad, H., 2012. Improving Project Management Process in Municipality Based on SWOT Analysis. *International Journal of Engineering and Technology,* 4(5), pp. 607-612.

Bahramnejad, P., Sharafi, S. M. & Nabiollah, A., 2015. A Method for Business Process Renegineering Based on Enterprise Ontology. *International Journal of Software Engineering & Applications,* 6(1), pp. 25-39.

Bell, S. & Christina, A., 2006. Applying Systemic Project Management Approaches for the UK National Health Service. *Systemic Practice and Action Research,* 19(1), pp. 27-43.

Bloch, M., Blumberg, S. & Laartz, J., 2012. *McKinsey.com.* [Online] Available at: http://www.mckinsey.com/insights/business_technology/delivering_large-scale_it_projects_on_time_on_budget_and_on_value
[Accessed 15 December 2015].

BPR Online Learning Centre, 1999. *Reengineering Success Factors.* [Online] Available at: http://www.prosci.com/factors.htm
[Accessed 14 March 2012].

Business Dictionary, n.d. *businessdictionary.com.* [Online] Available at: http://www.businessdictionary.com/definition/methodology.html
[Accessed 17 December 2013].

Cameron, R., 2011. Mixed Methods Research: The Five Ps Framewor. *The Electronic Journal of Busines Research Methods,* 9(2), pp. 96-108.

Carter, S. M. & Little, M., 2007. Justifying Knowledge, Justifying Method, Taking Action: Epistemologies, Methodologies, and Methods in Qualitative Research. *Quality Health Research,* 17(10), pp. 1316-1328.

Checkland, P., 1999. *Systems Thinking, Systems Practice: Includes a 30 Year Retrospective.* West Sussex: John Wiley and Sons, Ltd.

Collins English Dictionary, 2003. *thefreedictionary.com.* [Online] Available at: http://www.thefreedictionary.com/concept
[Accessed 10 December 2013].

Cox III, J. F., Goldratt, E. M. & Schleier Jr, J. G., 2010. *Theory of Constraints Handbook.* New York: McGraw Hill.

Creswell, J. W., 2009. *Research Design: Qualitative, Quantitative and Mixed Methods Approaches.* 3rd ed. California: Sage.

Creswell, J. W., 2013. *Qualitative Inquiry and Research Design Choosing Among Five Approaches.* Third ed. London: Sage.

Davenport, T. H., 2007. *The Fad That Forgot People.* [Online] Available at: http://www.fastcompany.com/magazine/01/reengin.html
[Accessed 14 March 2012].

David, J., 2008. *What are the critical success factors for Lean and/or Six-sigma implementations in South African Banks,* Johannesburg: University of South Africa.

Den Hengst, M. & De Vreede, G.-J., 2004. Collaborative Business Engineering: A decade of Lessons From the Field. *Journal of Management Information Systems,* 20(4), pp. 85-114.

Denning, S., 2010. *What HBR won't say: Why BPR failed.* [Online] Available at: http://stevedenning.typepad.com/steve_denning/2010/07/what-hbr-wont-say-why-bpr-failed.html
[Accessed 14 March 2012].

Edward, L. N. & Mbohwa, C., 2013. The Role of Leadership in Business Process Reengineering "Leaders, do you want to change?". *Information and Knowledge Management Journal,* 3(2), pp. 125-130.

Eftekhari, N. & Akhavan, P., 2013. Developing a Comprehensive Methodology for BPR Projects by Employing IT Tools. *Business Process Management Journal,* 19(1), pp. 4-29.

Flood, R. L. & Carson, E. R., 1993. *Dealing with Complexity, An Introduction to the Theory and Application of Systems Science.* 2nd ed. New York: Plenum Press.

Flyvbjerg, B. & Budzier, A., 2012. *hbr.com.* [Online] Available at: https://hbr.org/2011/09/why-your-it-project-may-be-riskier-than-you-think/ar/1
[Accessed 15 December 2015].

Furterer, S. L., 2009. *Lean Six Sigma in Service.* New York: CRC Press.

George, M. L., 2003. *Lean Six Sigma for Service.* New York: McGraw Hill.

Gerring, J., 2007. *Case Study Research Principles and Practices.* New York: Cambridge University Press.

Goldratt, E. M., 1990. *What is this thing Theory of Constraints and how should it be implemented.* Massachusetts: North River Press.

Grau, C. & Moormann, J., 2014. Investigating the Relationship between Process Management and Organizational Culture: Literature Review and Research Agenda. *Management and Organisation Studies,* 1(2), pp. 1-17.

Grover, V., Seong, J. R., Kettinger, W. J. & Teng, J. T., 1995. The Implementation of Business Process Reengineering. *Journal of Management Information Systems,* 12(1), pp. 109-144.

Habib, M. N., 2013. Understanding Critical Success and Failure Factors of Business Process Reengineering. *International Review of Management and Business Research Journal,* 2(1), pp. 1-10.

Habib, M. N. & Shah, A., 2013. *Business Process Reengineering: Literature Review of Approaches and Application.* Kuala Lumpur, Science and Education Publishing.

Hall, R., 2012. *Mixed Methods: In Search of a Paradigm.* Phuket, The Australian Multicultural Interaction Institute.

Hammer, M. & Champy, J., 1994. *Reengineering the Corporation: A Manifesto for Business Revolution.* London: Harper Business.

Harmon, P., 2008. Manufacturing and Service Processes. *Business Process Trends*, 15 April, 6(7).

Harvard Business School, 2010. *Improving Business Processes.* Massachusetts: Harvard Business Press.

Hays, D. G. & Singh, A. A., 2012. Qualitative Reasearch Paradigms and Traditions. In: *Qualitative Inquiry in Clinical and Educational Settings.* New York: The Guilford Press, pp. 32-66.

Hughes, C., 2006. *Warwick.ac.uk.* [Online] Available at: http://www2.warwick.ac.uk/fac/soc/sociology/staff/academicstaff/chughes/hughesc_index/teachingresearchprocess/whatisresearch/ [Accessed 14 April 2014].

Hussain, M., Saleh, M., Akbar , S. & Jan, Z., 2014. Factors Affecting Readiness for Business Process ReengineeringDeveloping and Proposing a Conceptual Model. *European Journal of Business and Management,* 6(1), pp. 55-60.

Hussein, B., Bazzi, H., Dayekh, A. & Hassan, W., 2013. Critical analysis of existing business process reengineering models: towards the development of a comprehensive integrated model. *Journal of Project, Program & Portfolio Management,* 4(1), pp. 30-40.

Hussein, B. & Dayekh, A., 2014. Business Process Reengineering (BPR) Key Success Factors. *International Journal of Applied Management Sciences and Engineering,* 1(1), pp. 58-66.

Hussein, B., Hammoud, M., Bazzi, H. & Haj-Ali, A., 2014. PRISM-Process Reengineering Integrated Spiral Model: An Agile Approach to Business Process Reengineering (BPR). *International Journal of Business and Management,* 9(10), pp. 134-142.

Hyett, N., Kenny, A. & Dickson-Swift, V., 2014. Methodology or method? A critical review of qualitative case study reports. *International Journal on Qualitative Studies on Health and Wellbeing,* Volume 9.

Jurisch, M. C., Ikas, C. & Palka, W., 2012. *A Review of Success Factors and Challenges of Public Sector BPR Implementations.* Munchen, IEEE Computer Society.

Krell, E., 2011. Managing the Matrix. *HR Magazine*, 1 April.

Kulkarni, S. S., O'Malley, L., Bishu, R. R. & Ding, X., 2007. *Utilizing Project Management Principles for Successful Six Sigma Project Execution.* Hershey, Idea Group Inc.

Kundu , P., Ratha, B. K. & Das, D., 2012. Revisiting Bpr: A New Framework & Model For Future. *International Journal of Engineering Research and Technology,* 1(8), pp. 1-17.

Kwak, Y. H. & Anbari, F. T., 2009. Analyzing project management research: perspectives from top management journals. *International Journal of Project Management,* Volume 27, pp. 435-446.

Kyupova, B., Rees, J. & Pene, K., 2009. *Knowledge Management Applied To Business Process Reengineering.* Southampton, Southampton Solent University.

La Rock, N., 2003. *Examining the Relationship Between Business Process Reengineering and Information Technology,* Maryland: Bowie State University.

Leedy, P. D. & Omrod, J. E., 2010. *Practical Research Planning and Design.* 9th ed. New Jersey: Pearson.

Liman Mansar, S. & Reijers, H. A., 2005. Best Practices in Business Process Redesign: An Overview and Qualitative Evaluation of Successful Redesign Heuristics. *Omega,* 33(4), pp. 283-306.

Magutu, P. O., Nyamwange, S. O. & Kaptoge, G. K., 2010. Business Process Reengineering for Competitive Advantage. *African Journal of Business & Management,* Volume 1, pp. 137-150.

Maleki, T. & Yokabed, Y., 2011. *Business process reengineering implementation: an investigation of critical success factors.* Singapore, IACSIT Press.

Manganelli, R. L. & Klein, M. M., 1994. *The Reengineering Handook.* New York: American Managerment Association.

Marx, A., 2010. Crisp-set qualitative comparative analysis (csQCA) and model specification. *International Journal of Multiple Research Approaches,* 4(2), pp. 138-158.

Marx, A. & Dusa, A., 2011. Crisp-set qualitative comparative analysis (csQCA), contradictions and consistency benchmarks for model specification. *Methodoligical Innovations Online,* 6(2), pp. 103-148.

Mayer, R. J. & deWitte, P. S., 1999. Delivering Results: Evolving BPR From Art to Engineering. In: *Business Process Engineering: Advancing the State of the Art.* Massachusetts: Springer US, pp. 83-129.

McGregor, S. L. T. & Murnane, J. A., 2010. Paradigm, methodology and method: Intellectual integrity in consumer scholarship. *International Journal of Consumer Studies,* 34(4), pp. 419-427.

Meadows, D. H., 2008. *Thinking in Systems a Primer.* Vermont: Chelsea Green Publishing.

Mintzberg, H., 1980. Structure in 5's: A synthesis of the Research in Organisation Design. *Management Science,* 26(3), pp. 322-341.

Murphy, J. D., 2009. *Flawless Execution: Bridging the Continuous Improvement Gap.* [Online]
Available at: http://www.articlesbase.com/management-articles/flawless-execution-bridging-the-continuous-improvement-gap-878195.html
[Accessed 15 March 2012].

Muthu, S., Whitman, L. & Cheraghi, S. H., 1999. *Business Process Engineering: A Consolidated Methodology.* San Antonio, Texas, Wichita State University.

Nave, D., 2002. How to Compare Six Sigma, Lean and Theory of Constraints. *Quality Progress*, March, pp. 73-78.

Nisar, Q. A., Ahmad, S. & Ahmad, U., 2014. Exploring Factors that Contribute to Success of Business Process Reengineering and Impact of Business Process Reengineering on Organizational Performance: A Qualitative Descriptive study on Banking Sector at Pakistan. *Asian Journal of Multidisciplinary Studies,* 2(6), pp. 219-224.

Oxford Dictionary, 2013. *oxforddictionaries.com.* [Online]
Available at: http://www.oxforddictionaries.com/definition/english/concept
[Accessed 10 December 2013].

Poetschke, F., 2003. *Uncontrolled.info.* [Online] Available at: http://uncontrolled.info/Materialien/Essays/Research%20II.pdf [Accessed 18 September 2013].
Prince2.com, n.d. *Prince2.com.* [Online] Available at: http://www.prince2.com/what-is-prince2 [Accessed 16 April 2014].

Process Quality Associates, 2006. *Six Sigma: The Evolution of Six Sigma.* [Online] Available at: http://www.pqa.net/ProdServices/sixsigma/W06002009.html [Accessed 15 March 2012].

Project Management Institute (OPM3), 2013. *Organisational Project Management Maturity Model (OPM3).* 3rd ed. Pennsylvania: Project Management Institute, Inc.

Project Management Institute (PgMP), 2013. *The Standard for Program Management.* 3rd ed. Pennsylvania: Project Management Institute, Inc.

Project Management Institute, 2013. *Project Management Body of Knowledge (PMBOK).* 5th ed. Pennsylvania: Project Management Institute.

Pyzdek, T. & Keller, P., 2010. *The Six Sigma Handbook.* 3rd ed. New York: McGraw Hill.

Ragin, C. C., 2000. Fuzzy-Set Social Science. In: *Fuzzy-Set Social Science.* Chicago: University of Chicago Press, pp. 100-140.

Ragin, C. C., 2008. *Redesigning Social Inquiry Fuzzy Sets and Beyond.* Chicago: The University of Chicago Press.

Ragin, C. C. & Davey, S., 2009. *fsQCA (Computer Programme), Version 2.5.* Tucson: University of Arizona.

Ragin, C. C., Strand, S. I. & Rubinson, C., 2008. *Users Guide to Fuzzy Set Qualitative Comparative Analysis.* Tucson: University of Arizona.

Ramanigopal, C. S., Palaniappan, G., Hemalatha, N. & Murugan, T., 2011. Business Process Rengineering and its Applications. *International Journal of Management Research and review,* 1(5), pp. 275-288.

Rihoux, B. & Ragin, C. C., 2009. *Configurational Comparative Methods, Qualitative Comparartive Analysis (QCA) and Related Techniques.* California: Sage Publications, Inc.

Rrezaie, K. et al., 2013. Learning organisations, strategic deployment and change management strategy for enhancing successful implementation of BPR projects. *International Journal Business Innovation and Research,* 7(1), pp. 61-83.

Sankaran, S., Haslett, T. & Sheffield, J., 2010. *Systems thinking approaches to address complex issues in project management.* Melbourne, Project Management Institute.

Schneider, C. Q. & Wagemann, C., 2007. *Set-Theoretic Methods for the Social Sciences, A Guide to Qualitative Comparative Analysis.* Cambridge: Cambridge University Press.

Sethi, V. & King, W. R., 1998. *Organizational Transformation Through Business Process Reengineering.* New Jersey: Prentice Hall.

Shane, J., Strong, K. & Gransberg, D., 2012. *Project Management Strategies for Complex Projects,* Iowa: National Academy of Sciences.

Singh, R. & Lano, K., 2014. Literature Survey of previous research work in Models and Methodologies in Project Management. *International Journal of Advanced Computer Science and Applications,* 5(9), pp. 107-122.

Sorsatakaro, G. & Wako, M. A., 2014. The Contribution of Business Process Reengineering Factors towards Employee Performance- The Case of SNNPRS Transport Bureau, Hawassa. *African International Journal of Research in Management,* 2(3).

Standish Group, 1995. *The Standish Group Report Chaos,* s.l.: The Standish Group.

Terrell, S. R., 2012. Mixed-Methods Research Methodologies. *The Qualitative Report,* 17(1), pp. 254-280.

Turley, F., 2010. *The PRINCE 2 Training Manual.* Tremelo: Management Plaza.

Turney, R. J., Anbari, F. & Bredillet, C., 2013. Perspectives on research in project management: the nine schools. *International Network of Business and Management,* Volume 1, pp. 3-28.

Varajão, J., Dominguez, C., Ribeiro, P. & Paiva, A., 2014. Critical Success Aspects in Project Management: Similarities and Differences the Construction and the Software Industry. *Technical Gazette,* 21(3), pp. 583-589.

Von Bertalanffy, L., 2009. *General Systems Theory.* 17th ed. New York: George Brazillier Inc.

Walker, D. H. & Steinfort, P., 2013. Using an improved rich pictures approach to improve project situational analysis in complex aid reconstruction development projects. *International Journal of Disaster Resilience in the Built Environmen,* 4(2), pp. 182-198.

Watson, R. B., 2012. Suggestions for New Application Areas for Soft Systems Methodology in the Information Age. *Systems Practice Action Research,* Volume 25, pp. 441-456.

Womac, J. P. & Jones, D. T., 2003. *Lean Thinking.* 2nd ed. New York: Free Press.
Yin, R. K., 2009. *Case Study Research Design and Methods.* 4th ed. California: Sage.

Zellner, G., 2011. A structured evaluation of business process improvement approache. *Business Process Management Journal ,* 17(2), pp. 203-237.

Appendix A: Application of Case Study Selection Protocol

Exploratory Questions per Project									
Step	**Category**	**Question**	**Project 1 Result**	**Project 2 Result**	**Project 3 Result**	**Project 4 Result**	**Project 5 Result**	**Project 6 Result**	**Project 7 Result**
1	Mandatory	Is a detailed project plan available?	✓	✓	✘	✘	✓	✓	✘
2	Mandatory (if negative on step 1)	Is a detailed implementation proposal available?	N/A	N/A	✓	✓	N/A	N/A	✓
3	Mandatory	Is the BPR project focused on an organisational business unit, including strategy and lowest level process execution?	✓	✓	✓	✓	✓	✓	✓
4	Mandatory	Is there evidence of the use of a project execution methodology?	✓	✓	✓	✓	✓	✓	✓
5	Mandatory	Are Six Sigma and or Lean Engineering used as the process improvement methodology?	✓	✓	✓	✓	✓	✓	✓
6	Supportive	Is a Project Charter available?	✓	✘	✘	✓	✓	✘	✓
7	Supportive	Is a Business Case available?	✓	✓	✘	✘	✓	✓	✘
Validation Questions for Artefacts Required									
Step	**Category**	**Question**	**Project 1 Result**	**Project 2 Result**	**Project 3 Result**	**Project 4 Result**	**Project 5 Result**	**Project 6 Result**	**Project 7 Result**
1	Mandatory	Have all artefacts per project been obtained?	✓	✘	✘	✓	✓	✘	✓

Appendix B: Findings and Timeline View of Projects

Project 1

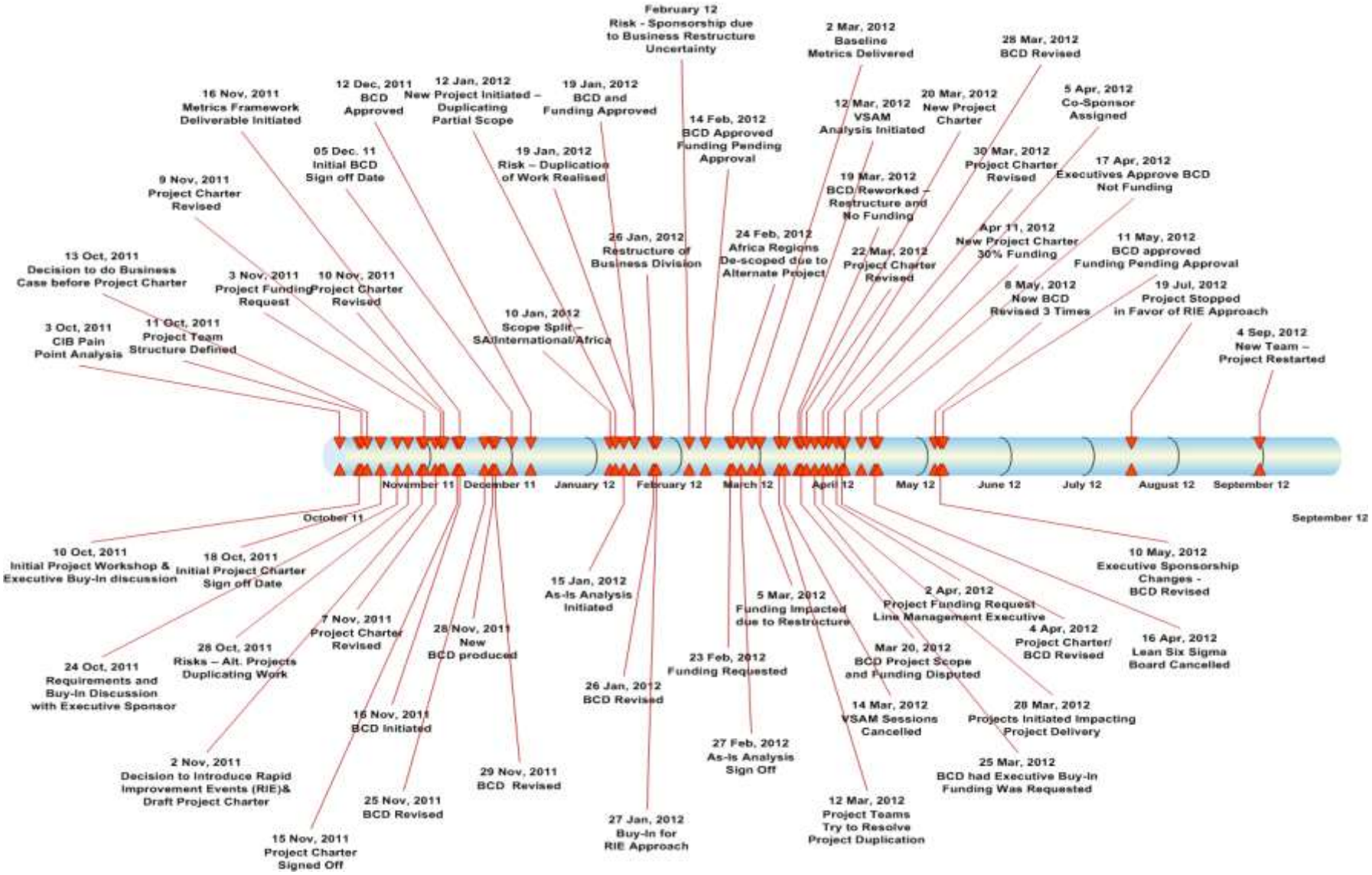
Restated Prior Researched Project Influential Factors			
Factor (BPR Online Learning Centre, 1999) (David, 2008) (Den Hengst & De Vreede, 2004) (Grover, et al., 1995)	**Present in Project**	**Impact to Project**	**Comments**
No resistance to changes being introduced by the project	No	Negative	There was buy-in for the value of conducting BPR projects, erratic sometimes, however the issue was that there were too many initiatives on-going which was creating change fatigue hence the resistance.
BPR Philosophy between project and organisation is aligned	Yes	Positive	Buy-In for the BPR concept was prevalent from Top Management. This led to strong willingness for engagement and sharing of information.
Project had a detailed Stakeholder Mapping and Engagement Plan in place	No	Negative	Even though there was never a concern around stakeholder management within the project, due to the organisation restructuring stakeholders were either identified very late or changed without any notification.
Analysis of As-Is Processes was of good quality	Yes	Positive	Very senior resources were allocated to the project. Project Resources were either certified as Six Sigma Black Belt or Green Belt Process Engineers.
Design of To-Be Processes was of good quality	No	No Impact	Project closed before this deliverable was realised

Organisation is eager to invest in large BPR type projects	No	Negative	This came about later in the project when the Business Unit embarked on a restructure, impacting Executive Sponsorship. Project Funding constantly fluxed between states of “approval” to “under discussion for approval”.
Project outcomes are in alignment of Organisation Vision and Goals	Yes	Positive	There was very strong alignment between the project deliverables and the strategy of the business unit. Huge focus was placed in reducing operational costs. This was directed from CEO/COO levels.
Organisation has a formal **B**usiness **P**rocess **M**anagement (BPM) structure in place	No	Negative	There was no evidence of formal business process ownership and management, which led to numerous debates on business process work carried out as various stakeholders were engaged for sign off.
Organisation has a Continuous Improvement Philosophy that aligns with the Organisation Strategy	Yes	Positive	This point allies itself with two other factors, namely; BPR Philosophy and Alignment of Vision and Goals
The project benefit calculations were realistic and undisputed	No	Negative	There was constant debate as to the benefits of executing the project. It was not a question of having quantitative verse qualitative benefits. It was about always showing a huge quantitative benefit in terms of financial returns in order to sell the business case.
Project had an excellent communication strategy and executed accordingly	Yes	Positive	Communication within the project teams and project stakeholders was very efficient and effective.
Project identified and trained all impacted stakeholders	Yes	Positive	Due to the lack of buy-in there were constant interventions focused on training impacted stakeholders about BPR concepts and the project outcomes.
Project deliverables and outcomes motivated all impacted stakeholders	No	Negative	There was unfortunately no motivation strategy for impacted stakeholders. The project was seen as a cost cutting exercise which led to employees feeling uncertain of job stability.
Project had a detailed change management strategy and executed accordingly	Yes	Positive	Change management was focused on acquiring buy-in for the project. The Executive Sponsors agreed about the value of doing the project. It was the restructure of the business unit that was preventing the project from moving forward.
Project had a defined team structure with strong engagement and cohesion	Yes	Positive	The project team was made up of very senior resources who had worked on successful projects before. This helped the team to persevere with the project for several months even in the midst of all the challenges the project was facing.
Project deliverables and outcomes aligned human resource policies within the organisation	Yes	Positive	There was agreement that this project will refresh and align human resource policies.
Project process design was customer centric	Yes	Positive	The project kicked off due to interventions being highlighted out of the last Customer Survey.
Project was independently managed by an experienced Project Manager using an industry accepted project management methodology	No	Negative	Both the project managers that were involved in the project were merely project administrators. The project manager’s line manager was having independent discussions with executive approvers which led to project decisions being made.
Project was prioritised according to organisation strategy and value outcomes	No	Negative	Due to the lack of an Investment Committee or integration into an existing Project/Portfolio Investment committee, the project was never given priority.

Project standardised reengineered products inclusive of processes	No	No Impact	Project closed before this deliverable was realised
Executive sponsorship existed and Executive Sponsor actively participated	No	Negative	Due to the organisation restructure executive sponsor assignment was in debate. Participation was also erratic.
Project had an undisputed compelling Business Case for change	Yes	Positive	It was unanimously agreed by all executive approvers that the business case was compelling.
Project used a proven Process Improvement Methodology	Yes	Positive	All Process work was of high quality. This was due to skilled Six Sigma resources that were following the Six Sigma methodology.
Line management ownership of project delivery was prevalent	Yes	Negative	This factor had a very negative impact on the project. This factor linked to the new factor identified as "Organisation/Business Politics", whereby line management changed decisions and approaches constantly based on which executive they spoke to last.
Project team had strong IT awareness and IT understanding when considering Business Process Integration into the IT system landscape	Yes	Positive	Project team was aware of IT as they have worked on IT projects previously. They also engaged with IT to determine integration and overlapping points. These were raised as risks to top management.
Project had an approved **S**cope **o**f **W**ork (SOW) which was stable and or managed according to proper change control processes	No	Negative	Due to the matrix executive approval structure, the organisation restructure, and other projects duplicating work there was constant scope changes. These changes were also managed inconsistently.
Selected Business Process Reengineering approach was aligned to organisation's acceptance of change. (Radical or Incremental)	Yes	Positive	All executive approvers agreed to select a single approach in order to improve business processes. The incremental approach was selected to reduce impact to organisation structures and IT systems.
Project benefit expectations were undisputed and measurable	No	Negative	None was realised due to the project premature closure, however there was constant debate around the benefits of the project even though there was an agreement as to the project's value in supporting the organisation's business unit strategy.
Project implementation timeframe was realistic and planned for based on approved scope.	No	Negative	Even though the project had a plan, which was approved, there was constant unrealistic timeframes being forced on to the project teams which was driven by line management. Timelines that were planned were also not met due to the constant debates arising between the executive approvers around scope and funding.
Organisation had a management structure that supported Project Execution	No	Negative	There was dominant matrix management structure which created complex decision points which resulted in constant debates around scope and funding. Investment committees were set up to manage BPR projects, however was later dissolved due to debates around project approvals.
Organisation/Business Politics did not influence decisions made on the project	No	Negative	Due to the matrix management structure multiple executive stakeholders were consulted for project approvals. This led to various debates and collusions around scope, sponsorship, and funding as well as the benefits of executing BPR projects.

Organisation had a high change adoption rate	No	Negative	Due to change fatigue within the organisation the adoption rate and buy-in for the concept of BPR and the value that can be derived from executing such a project was lengthy.
Organisation had stable, standardised tools for business process analysis and design	No	Negative	Project Team documented the As-Is process in ARIS and were later asked to retrofit all processes in a different tool and format namely BML. This required training of Process Engineers which delayed timelines. Business also could not understand the new models and were constantly debating the use of changing tools and design formats.
Organisation had a strong relationship with delivery partner/vendor	Yes	Positive	This factor is closely linked to the Project Team factor, however is stated here in terms of the organisation. This has an impact as to how project teams are structured as well as how stable project teams remain based on out of project relationships between delivery partners and vendors and the organisation itself. For this project relationships were strong and stable. There was no evidence to the contrary.

New Project Influential Factors			
Factor	**Present in Project**	**Positive or Negative Influence**	**Comments**
Organisation Functions/ Operations Structure was stable during the execution of the project	No	Negative	The Organisation Functions and Operational Structures were not stable which resulted in constant debates around scope, sponsorship and funding.
Single point of accountability and decision making was applied on the project (inherent within organisation management structures)	No	Negative	This did not exist within the project due to the dominant presence of a matrix management structure and the selection of a Co-Sponsorship model.
Executive Sponsor for the project remained stable	No	Negative	There was a lack of stability on the sponsorship role assignment. The Co-Sponsorship model that was eventually applied added complexity to the already complex matrix management structure.

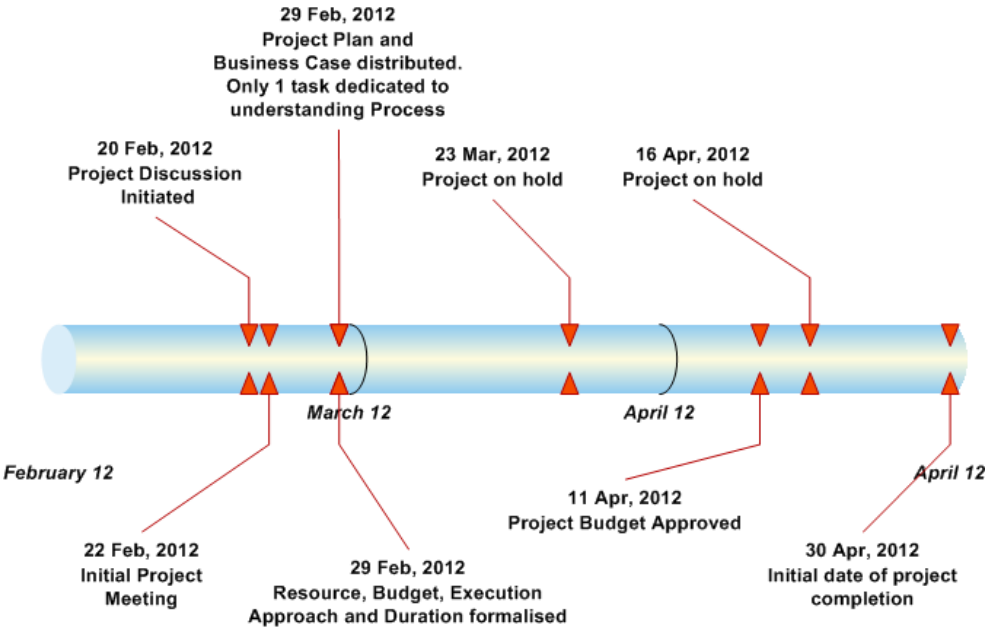

13 Oct, 2011
Decision to do Business Case before Project Charter
3 Oct, 2011
CIB Pain Point Analysis
11 Oct, 2011
Project Team Structure Defined
9 Nov, 2011
Project Charter Revised
16 Nov, 2011
Metrics Framework Deliverable Initiated
3 Nov, 2011
Project Funding Request
10 Nov, 2011
Project Charter Revised
05 Dec. 11
Initial BCD Sign off Date
12 Dec, 2011
BCD Approved
12 Jan, 2012
New Project Initiated – Duplicating Partial Scope
10 Jan, 2012
Scope Split – SA/International/Africa
19 Jan, 2012
Risk – Duplication of Work Realised
19 Jan, 2012
BCD and Funding Approved
26 Jan, 2012
Restructure of Business Division
February 12
Risk - Sponsorship due to Business Restructure Uncertainty
14 Feb, 2012
BCD Approved Funding Pending Approval
24 Feb, 2012
Africa Regions De-scoped due to Alternate Project
2 Mar, 2012
Baseline Metrics Delivered
12 Mar, 2012
VSAM Analysis Initiated
19 Mar, 2012
BCD Reworked – Restructure and No Funding
22 Mar, 2012
Project Charter Revised
20 Mar, 2012
New Project Charter
28 Mar, 2012
BCD Revised
30 Mar, 2012
Project Charter Revised
5 Apr, 2012
Co-Sponsor Assigned
17 Apr, 2012
Executives Approve BCD Not Funding
Apr 11, 2012
New Project Charter 30% Funding
8 May, 2012
New BCD Revised 3 Times
11 May, 2012
BCD approved Funding Pending Approval
19 Jul, 2012
Project Stopped in Favor of RIE Approach
4 Sep, 2012
New Team – Project Restarted
October 11
November 11
December 11
January 12
February 12
March 12
April 12
May 12
June 12
July 12
August 12
September 12
September 12
10 Oct, 2011
Initial Project Workshop & Executive Buy-In discussion
18 Oct, 2011
Initial Project Charter Sign off Date
24 Oct, 2011
Requirements and Buy-In Discussion with Executive Sponsor
28 Oct, 2011
Risks – Alt. Projects Duplicating Work
2 Nov, 2011
Decision to Introduce Rapid Improvement Events (RIE)& Draft Project Charter
7 Nov, 2011
Project Charter Revised
15 Nov, 2011
Project Charter Signed Off
16 Nov, 2011
BCD Initiated
25 Nov, 2011
BCD Revised
28 Nov, 2011
New BCD produced
29 Nov, 2011
BCD Revised
15 Jan, 2012
As-Is Analysis Initiated
26 Jan, 2012
BCD Revised
27 Jan, 2012
Buy-In for RIE Approach
23 Feb, 2012
Funding Requested
27 Feb, 2012
As-Is Analysis Sign Off
5 Mar, 2012
Funding Impacted due to Restructure
12 Mar, 2012
Project Teams Try to Resolve Project Duplication
Mar 20, 2012
BCD Project Scope and Funding Disputed
14 Mar, 2012
VSAM Sessions Cancelled
25 Mar, 2012
BCD had Executive Buy-In Funding Was Requested
2 Apr, 2012
Project Funding Request Line Management Executive
4 Apr, 2012
Project Charter/ BCD Revised
28 Mar, 2012
Projects Initiated Impacting Project Delivery
10 May, 2012
Executive Sponsorship Changes - BCD Revised
16 Apr, 2012
Lean Six Sigma Board Cancelled

Project 2

The BPR component of the project was an afterthought within an IT initiative dedicated to enhance the organisations access management processes and systems. The project plan initially only catered for one task dedicated to deliver on the as-is and to-be processes. There existed very limited access to the project teams and project information, hence the rejection of the project with regards to the detail analysis section.

Taking into account the limited access to the project, the following key findings were observed:

- BPR was not accepted within the IT initiative as value adding.
- The scope of the work was limited to documenting the as-is and to-be processes. Implementation was initially planned to be handled by the IT business analysts on the larger IT project. This was later re-planned to be handled by the process engineers allocated to produce the as-is and to-be processes.
- The project was placed on hold on two occasions, one before any executive approvals had taken place for scope budget and delivery timelines and the other after the executive approval for budget was obtained.
- The project was placed on hold due to the direct influence of IT executives on the project not buying into the value add of BPR type project work.

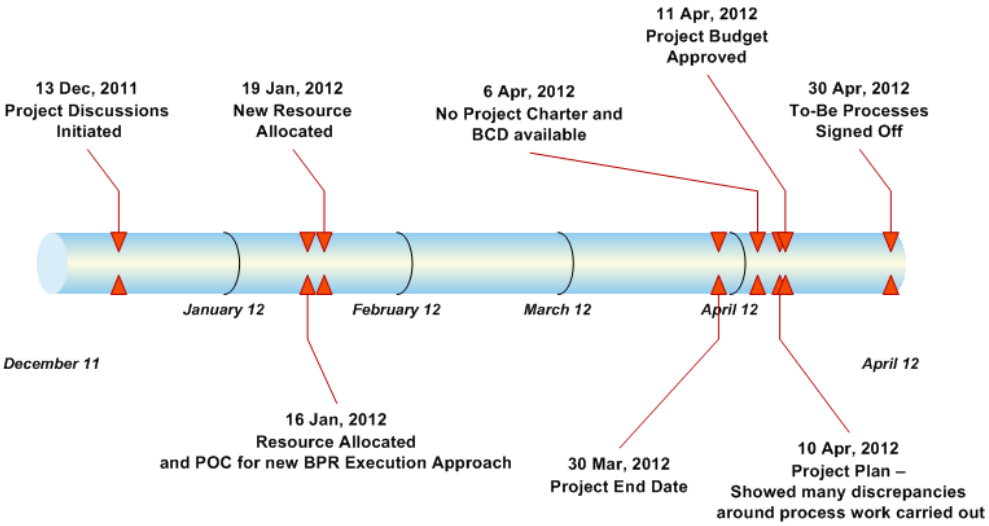


Project 3

The BPR component of the project formed part of a larger Regulatory Compliance Project driven from an IT Investment Committee perspective. The BPR work was to customise the SA portion of the compliance framework so that it could work for the internationally based business units. There existed very limited access to the project teams and project information, hence the rejection of the project with regards to the detail analysis section.

Taking into account the limited access to the project, the following key findings were observed:

- The scope of the work was limited to documenting the to-be processes. Implementation was planned to be handled by internationally based business analysts within the IT business unit.
- The project executed work which did not match the project plan.
- There was no BCD and Project Charter as confirmed by the resident Project Manager, produced for this initiative.
- The BPR component of the work was however successfully delivered as per informal dates agreed to, within the project team.
- The delivery of the to-be processes followed the RIE process improvement approach excluding the implementation components.



Project 4

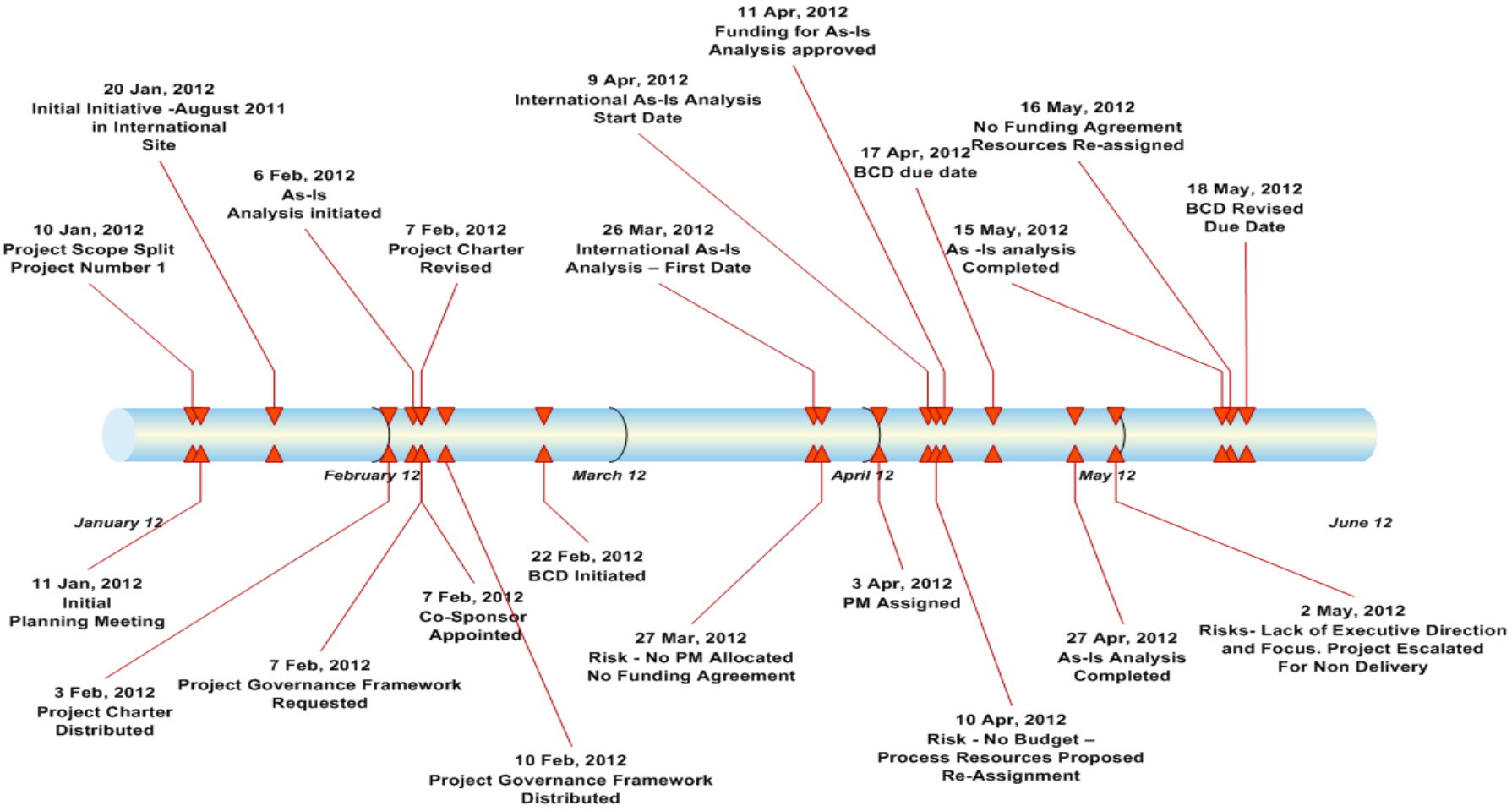
Restated Prior Researched Project Influential Factors			
Factor (BPR Online Learning Centre, 1999) (David, 2008) (Den Hengst & De Vreede, 2004) (Grover, et al., 1995)	**Present in Project**	**Positive or Negative Influence**	**Comments**
No resistance to changes being introduced by the project	No	Negative	Two components were wrapped within this factor, namely; Change fatigue due to numerous initiatives occurring at the same time and the downscaling of the international operations which resulted in job losses.
BPR Philosophy between project and organisation is aligned	No	Negative	The project was formed based on de-scoped components from project 1 and later included within an IT initiative.
Project had a detailed Stakeholder Mapping and Engagement Plan in place	No	Negative	Due to Co-Sponsorship the project team was always caught up between independent meetings with either project sponsor. It was also highlighted that there was no project feedback to the London based operations. This was later escalated to Senior Executives.
Analysis of As-Is Processes was of good quality	Yes	Positive	Very senior resources were allocated to the project. Project Resources were certified as Six Sigma Green Belt Process Engineers.

Design of To-Be Processes was of good quality	No	No Impact	Project closed before this deliverable was realised
Organisation is eager to invest in large BPR type projects	No	Negative	The Co-Sponsorship model resulted in funding ownership and approval indecision.
Project outcomes is in alignment of Organisation Vision and Goals	Yes	Positive	There was very strong alignment between the project deliverables and the strategy of the business unit. Huge focus was placed in reducing operational costs. This was directed from CEO/COO levels.
Organisation has a formal **B**usiness **P**rocess **M**anagement (BPM) structure in place	No	Negative	There was no evidence of formal business process ownership and management, which led to numerous debates on business process work carried out as various stakeholders were engaged for sign off.
Organisation has a Continuous Improvement Philosophy that aligns with the Organisation Strategy	Yes	Positive	This point allies itself with one of the other factors, namely; Alignment of Vision and Goals
The project benefit calculations were realistic and undisputed	No	No Impact	Project closed before this deliverable was realised
Project had an excellent communication strategy and executed accordingly	No	Negative	Related to factor "Stakeholder mapping and engagement"
Project identified and trained all impacted stakeholders	No	Negative	Project did not plan for these components. Stakeholders new to BPR did not understand what the project was trying to achieve and hence did not support the work.
Project deliverables and outcomes motivated all impacted stakeholders	No	Negative	There was unfortunately no motivation strategy for impacted stakeholders. The project was seen as a cost cutting exercise which led to employees feeling uncertain of job stability.
Project had an detailed change management strategy and executed accordingly	No	Negative	Change management was not planned for resulting in escalations on the project work and misinterpretation of the project scope and outcomes.
Project had a defined team structure with strong engagement and cohesion	No	Negative	Project team was made up of resources that were located across two geographies. Engagement was only via electronic mediums except for the two week As-Is analysis which was conducted at London. Engagement was erratic. There was also no project manager assigned to the project.
Project deliverables and outcomes aligned human resource policies within the organisation	Yes	Positive	There was agreement that this project will refresh and align impacted human resource policies.
Project process design was customer centric	No	Negative	Project was aimed at downscaling international operations.
Project was independently managed by an experienced Project Manager using an industry accepted project management methodology	No	Negative	No Project Manager assigned resulting in escalations to senior executives on the state of the project.
Project was prioritised according to organisation strategy and value outcomes	No	Negative	Due to the lack of an Investment Committee or integration into an existing Project/Portfolio Investment committee, the project was never given priority.
Project standardised reengineered products inclusive of processes	No	No Impact	Project closed before this deliverable was realised.
Executive sponsorship existed and Executive Sponsor actively participated	No	Negative	The Co-Sponsorship model as well as geographical disparity created complexity in terms of engagement and decision making.

Project had an undisputed compelling Business Case for change	No	No Impact	Project closed before this deliverable was realised.
Project used a proven Process Improvement Methodology	No	Negative	All Process work was of high quality. This was due to skilled Six Sigma resources that were following the Six Sigma methodology.
Line management ownership of project delivery was prevalent	Yes	Negative	This factor had a very negative impact on the project. This factor linked to the new factor identified as "Organisation/Business Politics", whereby line management changed decisions and approaches constantly based on which executive they spoke to last.
Project team had strong IT awareness and IT understanding when considering Business Process Integration into the IT system landscape	Yes	Positive	Project team was aware of IT as they have worked on IT projects previously. They also engaged with IT to determine integration and overlapping points. These were raised as risks to top management. However the project at the end of the case study formed part of an IT initiative; however no outcomes were achieved up to the end of the cases study as all the BPR resources were pulled of the project and the project was deemed closed by the BPR Business Unit.
Project had an approved **S**cope **o**f **W**ork (SOW) which was stable and or managed according to proper change control processes	No	Negative	Due to the matrix executive approval structure, the organisation restructure, and other projects duplicating work there was constant scope changes.
Selected Business Process Reengineering approach was aligned to organisation's acceptance of change. (Radical or Incremental)	No	Negative	No improvement of processes occurred.
Project benefit expectations were undisputed and measurable	No	No Impact	No BCD produced
Project implementation timeframe was realistic and planned for based on approved scope.	No	Negative	Due to erratic communication and stakeholder engagement, timeframes were not understood by all stakeholders and sometimes between members of the project team. Timelines for activities were planned on an adhoc basis.
Organisation had a management structure that supported Project Execution	No	Negative	There was dominant matrix management structure which created complex decision points which resulted in constant debates around scope and funding. Further to the matrix management structures geographical disparity of executive sponsorship and executive approvals proved to be quite complex as well. Investment committees were set up to manage BPR projects, however was later dissolved due to debates around project approvals.
Organisation/Business Politics did not influence decisions made on the project	No	Negative	Due to the matrix management structure and geographical disparity multiple executive stakeholders were consulted for project approvals. This led to various debates and collusions around scope, sponsorship, and funding.

Organisation had a high change adoption rate	No	Negative	Due to change fatigue within the organisation the adoption rate and buy-in for the concept of BPR and the value that can be derived from executing such a project was lengthy. Impacted employees were concerned for their jobs and did not support any initiative.
Organisation had stable, standardised tools for business process analysis and design	No	Negative	Project Team documented the As-Is process in ARIS and were later asked to retrofit all processes in a different tool and format namely BML. This required training of Process Engineers which delayed timelines. Business also could not understand the new models and were constantly debating the use of changing tools and design formats.
Organisation had a strong relationship with delivery partner/vendor	Yes	Positive	Organisation had strong stable relationships with selected delivery partners and vendors. There was no evidence to the contrary.

New Project Influential Factors			
Factor	**Present in Project**	**Positive or Negative Influence**	**Comments**
Organisation Functions/ Operations Structure was stable during the execution of the project	No	Negative	The Organisation Functions and Operational Structures were not stable which resulted in constant debates around scope, sponsorship and funding.
Single point of accountability and decision making was applied on the project (inherent within organisation management structures)	No	Negative	This did not exist within the project due to the dominant presence of a matrix management structure.
Executive Sponsor for the project remained stable	No	Negative	Sponsorship changed during the course of the project due to the organisation restructures. The Co-Sponsorship model that was applied during the course of the project added complexity to the already complex matrix management structure.


11 Apr, 2012
Funding for As-Is
Analysis approved
9 Apr, 2012
International As-Is Analysis
Start Date
20 Jan, 2012
Initial Initiative -August 2011
in International
Site
16 May, 2012
No Funding Agreement
Resources Re-assigned
17 Apr, 2012
BCD due date
6 Feb, 2012
As-Is
Analysis initiated
18 May, 2012
BCD Revised
Due Date
10 Jan, 2012
Project Scope Split
Project Number 1
7 Feb, 2012
Project Charter
Revised
26 Mar, 2012
International As-Is
Analysis – First Date
15 May, 2012
As -Is analysis
Completed
January 12
February 12
March 12
April 12
May 12
June 12
11 Jan, 2012
Initial
Planning Meeting
22 Feb, 2012
BCD Initiated
7 Feb, 2012
Co-Sponsor
Appointed
3 Apr, 2012
PM Assigned
2 May, 2012
Risks- Lack of Executive Direction
and Focus. Project Escalated
For Non Delivery
27 Mar, 2012
Risk - No PM Allocated
No Funding Agreement
27 Apr, 2012
As-Is Analysis
Completed
3 Feb, 2012
Project Charter
Distributed
7 Feb, 2012
Project Governance Framework
Requested
10 Apr, 2012
Risk - No Budget –
Process Resources Proposed
Re-Assignment
10 Feb, 2012
Project Governance Framework
Distributed

Project 5

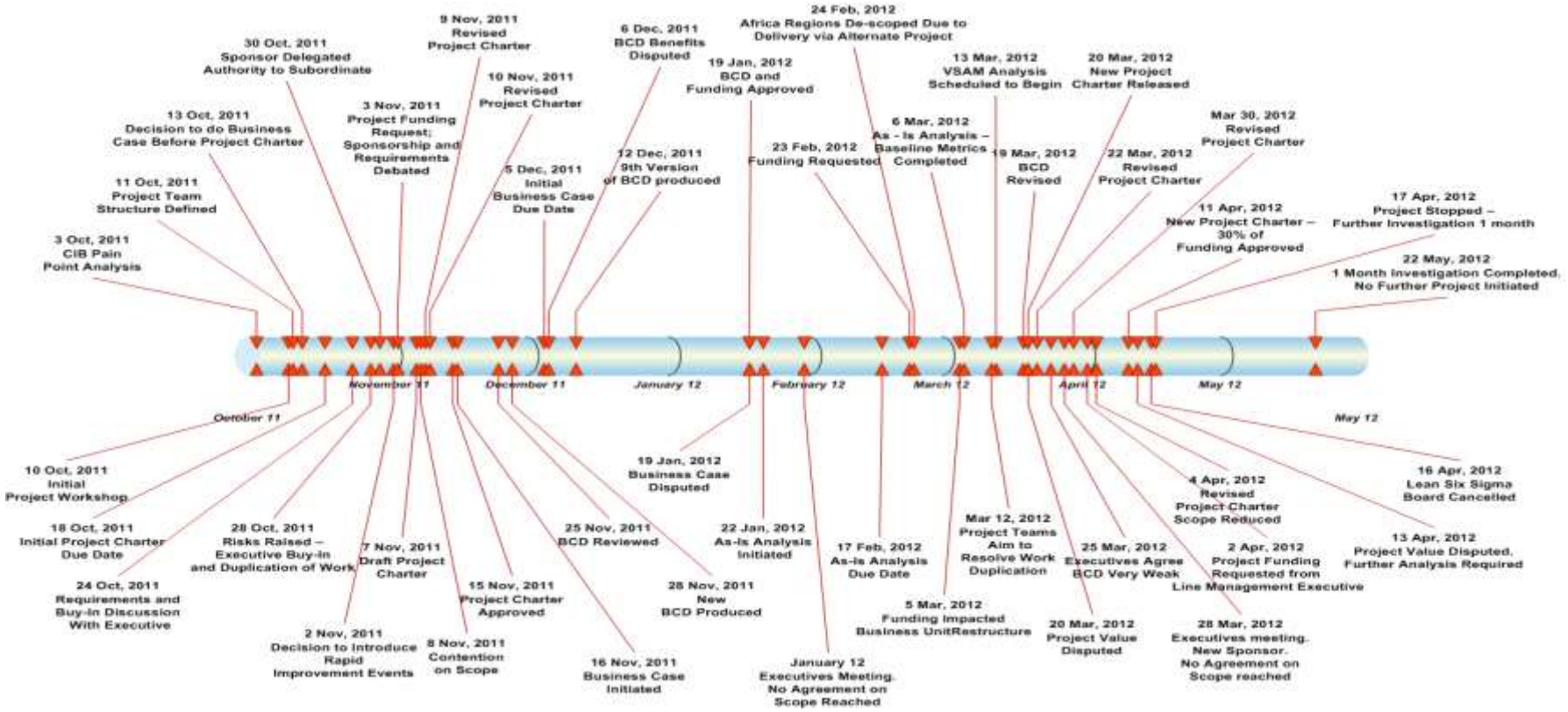
Restated Prior Researched Project Influential Factors			
Factor (BPR Online Learning Centre, 1999) (David, 2008) (Den Hengst & De Vreede, 2004) (Grover, et al., 1995)	**Present in Project**	**Positive or Negative Influence**	**Comments**
No resistance to changes being introduced by the project	No	Negative	There was limited buy-in for the value of conducting BPR projects which was further enhanced due to too many on-going initiatives creating change fatigue.
BPR Philosophy between project and organisation is aligned	No	Negative	The situational environment was created by very IT focused Executives. There was limited buy-in for BPR.
Project has detailed Stakeholder Mapping and Engagement Plan in place	No	Negative	Even though there was never a concern around stakeholder management within the project, due to the organisation restructuring stakeholders were either identified very late or changed without any notification.
Analysis of As-Is Processes was of good quality	Yes	Positive	Very senior resources were allocated to the project. Project Resources were either certified as Six Sigma Black Belt or Green Belt Process Engineers.
Design of To-Be Processes was of good quality	No	No Impact	Project closed before this deliverable was realised.
Organisation is eager to invest in large BPR type projects	No	Negative	This came about later in the project when the Business Unit embarked on a restructure, impacting Executive Sponsorship. Project Funding constantly fluxed between states of “approval” to “under discussion for approval”. The lack of buy-in for the business case of the project further negatively impacted the project.
Project outcomes is in alignment of Organisation Vision and Goals	Yes	Positive	There was very strong alignment between the project deliverables and the strategy of the business unit. Huge focus was placed in reducing operational costs. This was directed from CEO/COO levels.
Organisation has a formal **B**usiness **P**rocess **M**anagement (BPM) structure in place	No	Negative	There was no evidence of formal business process ownership and management, which led to numerous debates on business process work carried out as various stakeholders were engaged for sign off.
Organisation has a Continuous Improvement Philosophy that aligns with the Organisation Strategy	No	Negative	This point allies itself with the BPR Philosophy factor.
The project benefit calculations were realistic and undisputed	No	Negative	There was constant debate as to the benefits of executing the project. It was not a question of having quantitative verse qualitative benefits. It was about always showing a huge quantitative benefit in terms of financial returns. Even the financial returns were disputed.
Project had an excellent communication strategy and executed accordingly	Yes	Positive	Communication within the project teams and project stakeholders was very efficient and effective.
Project identified and trained all impacted stakeholders	Yes	Positive	Due to the lack of buy-in there were constant interventions focused on training impacted stakeholders about BPR concepts.

Project deliverables and outcomes motivated all impacted stakeholders	No	Negative	There was unfortunately no motivation strategy for impacted stakeholders. The project was seen as a cost cutting exercise which led to employees feeling uncertain of job stability.
Project had a detailed change management strategy and executed accordingly	Yes	Positive	Change management was focused on acquiring buy-in for the project. The Executive Sponsors agreed that something was required. They just did not agree as to the "what".
Project had a defined team structure with strong engagement and cohesion	Yes	Positive	The project team was made up of very senior resources who had worked on successful projects before. This helped the team to persevere with the project for several months even in the midst of all the challenges the project was facing.
Project deliverables and outcomes aligned human resource policies within the organisation	Yes	Positive	There was agreement that this project will refresh and align human resource policies.
Project process design was customer centric	Yes	Positive	The project kicked off due to interventions being highlighted out of the last Customer Survey.
Project was independently managed by an experienced Project Manager using an industry accepted project management methodology	No	Negative	All three project managers that were involved in the project were merely project administrators. The project manager's line manager was having independent discussions with executive approvers which led to project decisions being made.
Project was prioritised according to organisation strategy and value outcomes	No	Negative	Due to the lack of an Investment Committee or integration into an existing Project/Portfolio Investment committee, the project was never given priority.
Project standardised reengineered products inclusive of processes	No	No Impact	Project closed before this deliverable was realised.
Executive sponsorship existed and Executive Sponsor actively participated	No	Negative	Due to the organisation restructure executive sponsor assignment was in debate. Participation was also erratic.
Project had an undisputed compelling Business Case for change	No	Negative	Majority of the executives disputed the value of the project.
Project used a proven Process Improvement Methodology	Yes	Positive	All Process work was of high quality. This was due to skilled Six Sigma resources that were following the Six Sigma methodology.
Line management ownership of project delivery was prevalent	Yes	Negative	This factor had a very negative impact on the project. This factor linked to the new factor identified as "Organisation/Business Politics", whereby line management changed decisions and approaches constantly based on which executive they spoke to last.
Project team had strong IT awareness and IT understanding when considering Business Process Integration into the IT system landscape	No	Negative	Project team members were not IT intuitive. They managed to identify overlapping projects and integration points however were constantly on the back foot as IT executives constantly questioned the value of BPR integrated with IT. The project team could not respond accordingly thus leading to lack of buy-in from the IT executives of the positioned value of the project.

Project had an approved **S**cope **o**f **W**ork (SOW) which was stable and or managed according to proper change control processes	No	Negative	Due to the matrix executive approval structure, the organisation restructure, and other projects duplicating work there was constant scope changes. Scope was also debated as the value of the project was never bought into by the executive management structures.
Selected Business Process Reengineering approach was aligned to organisation's acceptance of change. (Radical or Incremental)	No	Negative	All executive approvers could not agree on approach for the project.
Project benefit expectations were undisputed and measurable	No	Negative	None was realised due to the project premature closure, however there was constant debate around the benefits of the project.
Project implementation timeframe was realistic and planned for based on approved scope.	No	Negative	Even though the project had a plan, which was approved, there was constant unrealistic timeframes being forced on to the project teams which was driven by line management. Timelines that were planned were also not met due to the constant debates arising between the executive approvers around scope and funding.
Organisation had a management structure that supported Project Execution	No	Negative	There was dominant matrix management structure which created complex decision points which resulted in constant debates around scope and funding. Investment committees were set up to manage BPR projects, however was later dissolved due to debates around project approvals.
Organisation/Business Politics did not influence decisions made on the project	No	Negative	Due to the matrix management structure multiple executive stakeholders were consulted for project approvals. This led to various debates and collusions around scope, sponsorship, and funding as well as the benefits of executing BPR projects.
Organisation had a high change adoption rate	No	Negative	Due to change fatigue within the organisation the adoption rate and buy-in for the concept of BPR and the value that can be derived from executing such a project was lengthy.
Organisation had stable, standardised tools for business process analysis and design	No	Negative	Project Team documented the As-Is process in ARIS and were later asked to retrofit all processes in a different tool and format namely BML. This required training of Process Engineers which delayed timelines. Business also could not understand the new models and were constantly debating the use of changing tools and design formats.
Organisation had a strong relationship with delivery partner/vendor	Yes	Positive	Organisation had strong stable relationships with selected delivery partners and vendors. There was no evidence to the contrary.

New Project Influential Factors			
Factor	**Present in Project**	**Positive or Negative Influence**	**Comments**
Organisation Functions/ Operations Structure was stable during the execution of the project	No	Negative	The Organisation Functions and Operational Structures were not stable which resulted in constant debates around scope, sponsorship and funding.

Single point of accountability and decision making was applied on the project (inherent within organisation management structures)	No	Negative	This did not exist within the project due to the dominant presence of a matrix management structure.
Executive Sponsor for the project remained stable	No	Negative	Sponsorship changed during the course of the project due to the organisation restructures. The Co-Sponsorship model that was applied during the course of the project added complexity to the already complex matrix management structure.


24 Feb, 2012
Africa Regions De-scoped Due to Delivery via Alternate Project
9 Nov, 2011
Revised
Project Charter
6 Dec, 2011
BCD Benefits
Disputed
30 Oct, 2011
Sponsor Delegated
Authority to Subordinate
19 Jan, 2012
BCD and
Funding Approved
13 Mar, 2012
VSAM Analysis
Scheduled to Begin
20 Mar, 2012
New Project
Charter Released
10 Nov, 2011
Revised
Project Charter
13 Oct, 2011
Decision to do Business
Case Before Project Charter
3 Nov, 2011
Project Funding
Request;
Sponsorship and
Requirements
Debated
6 Mar, 2012
As - Is Analysis –
Baseline Metrics
Completed
Mar 30, 2012
Revised
Project Charter
12 Dec, 2011
9th Version
of BCD produced
23 Feb, 2012
Funding Requested
19 Mar, 2012
BCD
Revised
22 Mar, 2012
Revised
Project Charter
5 Dec, 2011
Initial
Business Case
Due Date
11 Oct, 2011
Project Team
Structure Defined
11 Apr, 2012
New Project Charter –
30% of
Funding Approved
17 Apr, 2012
Project Stopped –
Further Investigation 1 month
3 Oct, 2011
CIB Pain
Point Analysis
22 May, 2012
1 Month Investigation Completed.
No Further Project Initiated
November 11
December 11
January 12
February 12
March 12
April 12
May 12
October 11
May 12
19 Jan, 2012
Business Case
Disputed
10 Oct, 2011
Initial
Project Workshop
16 Apr, 2012
Lean Six Sigma
Board Cancelled
4 Apr, 2012
Revised
Project Charter
Scope Reduced
18 Oct, 2011
Initial Project Charter
Due Date
28 Oct, 2011
Risks Raised –
Executive Buy-in
and Duplication of Work
7 Nov, 2011
Draft Project
Charter
25 Nov, 2011
BCD Reviewed
22 Jan, 2012
As-Is Analysis
Initiated
17 Feb, 2012
As-Is Analysis
Due Date
Mar 12, 2012
Project Teams
Aim to
Resolve Work
Duplication
25 Mar, 2012
Executives Agree
BCD Very Weak
2 Apr, 2012
Project Funding
Requested from
Line Management Executive
13 Apr, 2012
Project Value Disputed.
Further Analysis Required
24 Oct, 2011
Requirements and
Buy-in Discussion
With Executive
15 Nov, 2011
Project Charter
Approved
28 Nov, 2011
New
BCD Produced
5 Mar, 2012
Funding Impacted
Business UnitRestructure
20 Mar, 2012
Project Value
Disputed
28 Mar, 2012
Executives meeting.
New Sponsor.
No Agreement on
Scope reached
2 Nov, 2011
Decision to Introduce
Rapid
Improvement Events
8 Nov, 2011
Contention
on Scope
16 Nov, 2011
Business Case
Initiated
January 12
Executives Meeting.
No Agreement on
Scope Reached

Project 6

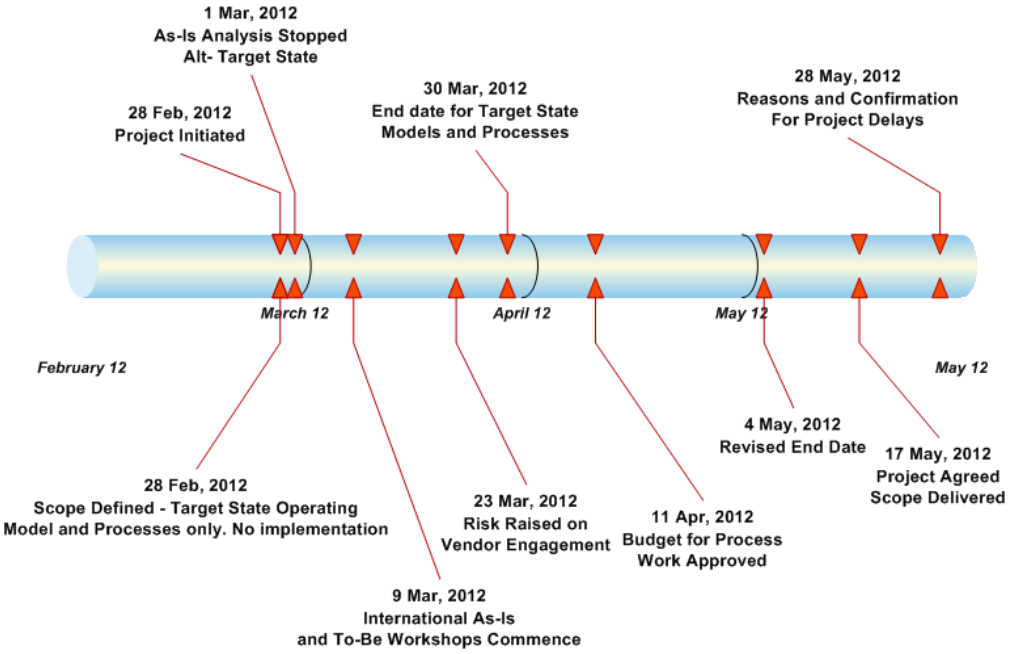
Restated Prior Researched Project Influential Factors			
Factor (BPR Online Learning Centre, 1999) (David, 2008) (Den Hengst & De Vreede, 2004) (Grover, et al., 1995)	**Present in Project**	**Positive or Negative Influence**	**Comments**
No resistance to changes being introduced by the project	Yes	Positive	Due to the nature of the way the BPR work was completed, namely; under a Business Transformation Initiative, there were no reservations, probably due to the fact that the business had no choice.
BPR Philosophy between project and organisation is aligned	Yes	Positive	BPR philosophy was very well understood and aligned with the organisation in terms of the strategic outcome and the value of BPR work to support the strategic outcome.
Project has detailed Stakeholder Mapping and Engagement Plan in place	Yes	Positive	There was never a concern around stakeholder involvement within the project. All stakeholders were identified very early in the Business Transformation Program.
Analysis of As-Is Processes was of good quality	No	No Impact	As –Is analysis was stopped in favour of a To-Be target state.
Design of To-Be Processes was of good quality	Yes	Positive	Very senior resources were allocated to the project. Project Resources were either certified as Six Sigma Black Belt or Green Belt Process Engineers. The vendor also provided the required tools and process design method knowledge as well.
Organisation is eager to invest in large BPR type projects	Yes	Positive	The project Executive Sponsor held single accountability for project budget decisions. The budget allocation to BPR work was never an issue.
Project outcomes is in alignment of Organisation Vision and Goals	Yes	Positive	There was very strong alignment between the project deliverables and the strategy of the business unit. Huge focus was placed in reducing operational costs. This was directed from CEO/COO levels.
Organisation has a formal **B**usiness **P**rocess **M**anagement (BPM) structure in place	No	No Impact	There was no evidence of formal business process ownership and management.
Organisation has a Continuous Improvement Philosophy that aligns with the Organisation Strategy	No	No Impact	The projects focus was on radically changing the operating model of the Credit Functions across the organisation including multiple geographies.
The project benefit calculations were realistic and undisputed	Yes	Positive	The benefits and value of the BPR initiative forming part of the Business Transformation Programme was not disputed, in fact a budget was approved in excess of business case requirements.
Project had an excellent communication strategy and executed accordingly	Yes	Positive	Communication within the project teams and project stakeholders was very efficient and effective.
Project identified and trained all impacted stakeholders	No	No Impact	BPR training was not required.
Project deliverables and outcomes motivated all impacted stakeholders	No	Negative	Due to the nature of the project, this was considered as critical for the organisation to compete in the market, which was considered to be motivation enough.
Project had a detailed change management strategy and executed accordingly	Yes	Positive	Change management was focused on driving the need for change so that adoption of the new business operating model occurred faster.

Project had a defined team structure with strong engagement and cohesion	No	Negative	The project team was made up of very senior resources that engaged at a professional level; however external vendor engagements required new vendor resources being placed on the project. This did delay the project delivery timelines initially agreed to.
Project deliverables and outcomes aligned human resource policies within the organisation	Yes	Positive	There was agreement that this project will refresh and align human resource policies.
Project process design was customer centric	No	No Impact	The project kicked off due to the need for the organisation to compete competitively from a product cost perspective.
Project was independently managed by an experienced Project Manager using an industry accepted project management methodology	Yes	Positive	There was a dedicated project manager reporting into the Business Transformation Programme Board. Accountability for delivery was driven by the project manager and escalations or changes was approved and or resolved at board level.
Project was prioritised according to organisation strategy and value outcomes	Yes	Positive	The project ran under a Business Transformation Programme which was prioritised at the organisations established Business investment committee
Project standardised reengineered products inclusive of processes	Yes	Positive	By standardising business processes within the target state operating model, stakeholders were able to see the value of BPR work in operation. This standardisation allowed for scalability of operations.
Executive sponsorship existed and Executive Sponsor actively participated	Yes	Positive	Executive Sponsorship worked very well due to the structured governance that was in place to handle approvals and disputes. There was a single accountability framework created by the Executive Sponsor." The buck stopped with him"
Project had an undisputed compelling Business Case for change	Yes	Positive	The business case put forward by the project was undisputed and accordingly approved.
Project used a proven Process Improvement Methodology	Yes	Positive	All Process work was of high quality. This was due to skilled Six Sigma resources that were following the Six Sigma methodology in combination with the BML methodology for analysis and design of business processes.
Line management ownership of project delivery was prevalent	No	Positive	Even though Line Management was not involved, due to the nature of the programme board setup, the BPR project was delivering according to agreed scope, budget and timelines, while managing any changes via a stabilised change process.
Project team had strong IT awareness and IT understanding when considering Business Process Integration into the IT system landscape	No	No Impact	IT awareness was not a concern as this was a project focused solely on reducing number of operational areas that focused on credit books across the organisation.
Project had an approved **S**cope **o**f **W**ork (SOW) which was stable and or managed according to proper change control processes	Yes	Positive	Due to the nature of the project setup, scope was finalised very early in the project. Any changes were appropriately managed.

Selected Business Process Reengineering approach was aligned to organisation's acceptance of change. (Radical or Incremental)	Yes	Positive	Due to the fact that this was a Business Transformation change, it was considered a radical change to Business. With proper change management and engagement, the radical change was accepted as necessary and value for the change was accepted and supported.
Project benefit expectations were undisputed and measurable	Yes	Positive	Disputes on value of project and benefits were never discussed in any meeting that was under observation.
Project implementation timeframe was realistic and planned for based on approved scope.	Yes	Positive	Project was controlled by Business Transformation Programme Board which was well established. Timeframes were approved and any changes were managed via the change process.
Organisation had a management structure that supported Project Execution	Yes	Positive	The initiative was delivered under the auspices of the Business Investment Committee Initial Project prioritisation, scope and budget decisions were made via a well-established Committee. Once approved the project decisions were then taken up via the Projects Programme Board, which was chaired by the Executive Sponsor. Single accountability for decision making was present even though consultative debates were entertained.
Organisation/Business Politics did not influence decisions made on the project	Yes	Positive	Business Politics were prevalent, however due to the nature of the project decisions were made by senior executives and held to by the Executive sponsor of the project. No other discussions were entertained around priority, scope, budget and timelines outside of the Programme Board which reported to the Business Investment Committee
Organisation had a high change adoption rate	Yes	Positive	BPR concepts were understood and accepted. Changes were aggressively managed as part of the larger Programme resulting in a high adoption rate.
Organisation had stable, standardised tools for business process analysis and design	Yes	Positive	Project Team documented all work on the BML toolsets. This was mandated by the organisational move to change toolsets used.
Organisation had a strong relationship with delivery partner/vendor	No	Negative	Line Management although not part of the project team had an altercation with resources assigned on the project, this resulted in vendor replacing the resources which also resulted in time delays for the project.

New Project Influential Factors			
Factor	**Present in Project**	**Positive or Negative Influence**	**Comments**
Organisation Functions/ Operations Structure was stable during the execution of the project	Yes	Positive	The Organisation Functions and Operational Structures were stable.
Single point of accountability and decision making was applied on the project (inherent within organisation management structures)	Yes	Positive	This factor links with the Organisational Management Structure factor.

Executive Sponsor for the project remained stable	Yes	Positive	There was only a single Executive Sponsor for the entire Business Transformation initiative under which the BPR work was executed. This did not change during the course of the project.



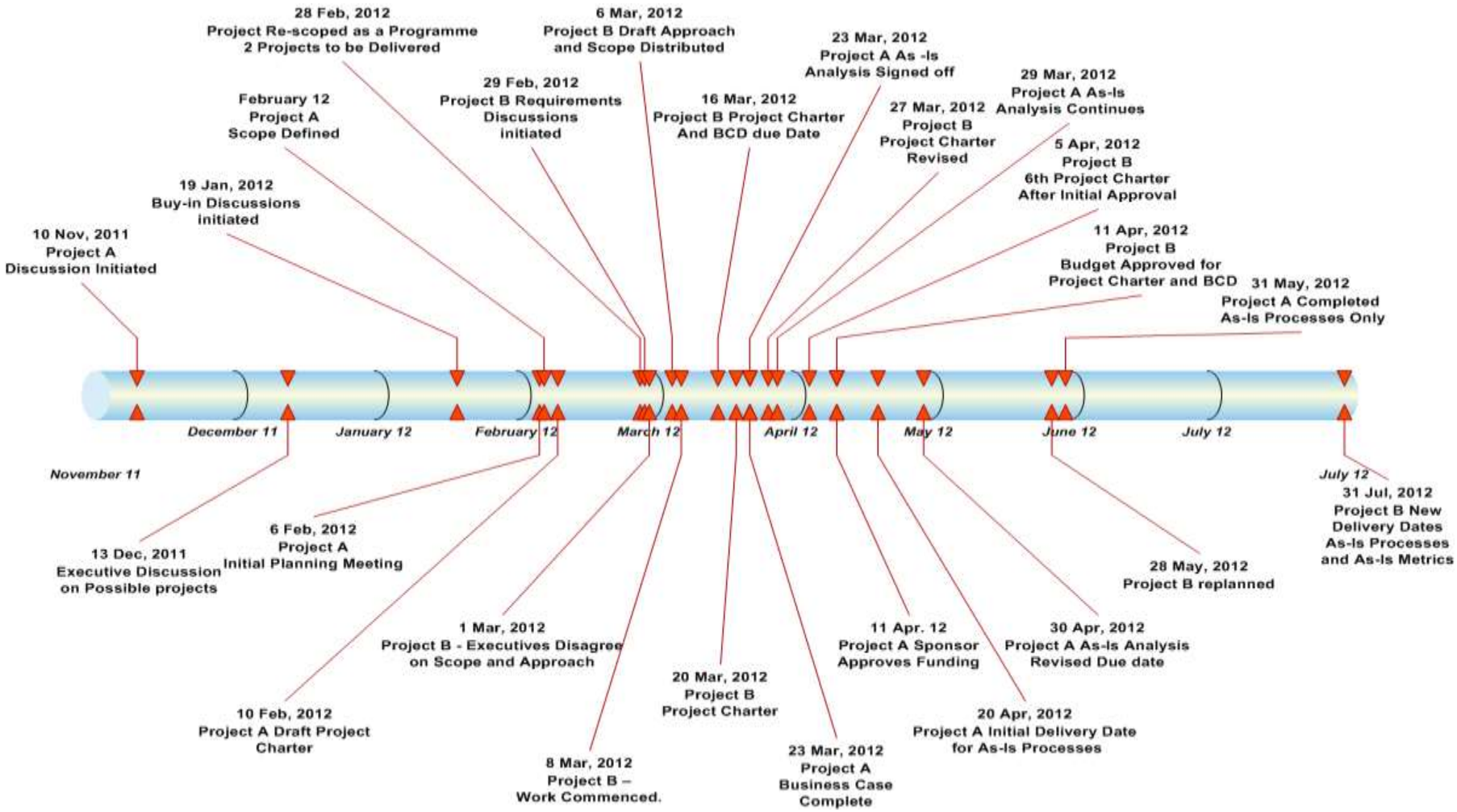
Project 7

Restated Prior Researched Project Influential Factors			
Factor (BPR Online Learning Centre, 1999) (David, 2008) (Den Hengst & De Vreede, 2004) (Grover, et al., 1995)	**Present in Project**	**Positive or Negative Influence**	**Comments**
No resistance to changes being introduced by the project	Yes	Positive	Due to the nature of the way the BPR work was completed, namely; under an IT system replacement initiative, there were no reservations, probably due to the fact that the business had no choice.
BPR Philosophy between project and organisation is aligned	Yes	Positive	The BPR work considered only understanding the As-Is Business Process landscape which was aligned to the overall objective of the project.
Project has detailed Stakeholder Mapping and Engagement Plan in place	Yes	Positive	There was never a concern around stakeholder involvement within the project. All stakeholders were identified very early in the IT Program.
Analysis of As-Is Processes was of good quality	Yes	Positive	Very senior resources were allocated to the project. Project Resources were either certified as Six Sigma Black Belt or Green Belt Process Engineers.
Design of To-Be Processes was of good quality	No	No Impact	Not required for delivery as this formed part of the larger IT program.
Organisation is eager to invest in large BPR type projects	Yes	Positive	The project Executive Sponsor held single accountability for project budget decisions. The budget allocation to BPR work was never an issue.

Project outcomes is in alignment of Organisation Vision and Goals	Yes	Positive	There was very strong alignment between the project deliverables and the strategy of the business unit. Huge focus was placed in reducing operational costs. This was directed from CEO/COO levels.
Organisation has a formal **B**usiness **P**rocess **M**anagement (BPM) structure in place	No	No Impact	There was no evidence of formal business process ownership and management.
Organisation has a Continuous Improvement Philosophy that aligns with the Organisation Strategy	No	No Impact	The projects focus was on radically changing IT systems, which included business processes
The project benefit calculations were realistic and undisputed	Yes	Positive	The BPR work did not involve benefit calculations; however the benefits and value of the IT initiative it formed part of, was not disputed in any meetings that were observed.
Project had an excellent communication strategy and executed accordingly	Yes	Positive	Communication within the project teams and project stakeholders was very efficient and effective.
Project identified and trained all impacted stakeholders	No	No Impact	BPR training was not required.
Project deliverables and outcomes motivated all impacted stakeholders	No	Negative	Due to the nature of the project. Benefits was realised in changing the IT systems, hence it was a top down decision.
Project had a detailed change management strategy and executed accordingly	Yes	Positive	Change management was focused on driving the need for change so that adoption of the new technology and associated processes were faster.
Project had a defined team structure with strong engagement and cohesion	Yes	Positive	The project team was made up of very senior resources who had worked on successful projects before.
Project deliverables and outcomes aligned human resource policies within the organisation	Yes	Positive	There was agreement that this project will refresh and align human resource policies.
Project process design was customer centric	No	No Impact	The project kicked off due to the need to replace very old IT systems.
Project was independently managed by an experienced Project Manager using an industry accepted project management methodology	Yes	Positive	There was a dedicated project manager reporting into the IT Initiative Board. Accountability for delivery was driven by the project manager and escalations or changes was approved and or resolved at board level.
Project was prioritised according to organisation strategy and value outcomes	Yes	Positive	The project ran under an IT initiative which was prioritised at the organisations established IT investment committee
Project standardised reengineered products inclusive of processes	No	No Impact	Not a requirement for the BPR scoped work
Executive sponsorship existed and Executive Sponsor actively participated	Yes	Positive	Executive Sponsorship worked very well due to the structured governance that was in place to handle approvals and disputes. There was a single accountability framework created by the Executive Sponsor.” The buck stopped with him”
Project had an undisputed compelling Business Case for change	Yes	Positive	This formed part of the IT initiative deliverables which was approved very early on as part of the IT Investment Board.
Project used a proven Process Improvement Methodology	Yes	Positive	All Process work was of high quality. This was due to skilled Six Sigma resources that were following the Six Sigma methodology.

Line management ownership of project delivery was prevalent	No	Positive	Even though Line Management was not involved, due to the nature of the programme board setup, the BPR project was delivering according to agreed scope, budget and timelines, while managing any changes via a stabilised IT change process.
Project team had strong IT awareness and IT understanding when considering Business Process Integration into the IT system landscape	Yes	Positive	The BPR work was carried out under the banner of an IT initiative. Work was very closely linked to IT deliverables and resources were skilled it both BPR and IT projects.
Project had an approved **S**cope **o**f **W**ork (SOW) which was stable and or managed according to proper change control processes	Yes	Positive	Due to the nature of the project setup, scope was finalised very early in the project. Any changes were appropriately managed.
Selected Business Process Reengineering approach was aligned to organisation's acceptance of change. (Radical or Incremental)	Yes	Positive	Due to the fact that this was an IT system change, it was considered a radical change to IT and Business. With proper change management and engagement, the radical change was accepted as necessary and value for the change was accepted and supported.
Project benefit expectations were undisputed and measurable	Yes	Positive	This formed part of the larger IT Programme. Disputes on value of project and benefits were never discussed in any meeting that was under observation.
Project implementation timeframe was realistic and planned for based on approved scope.	Yes	Positive	Project was controlled by the IT Initiative Programme Board which was well established. Timeframes were approved and any changes were managed via the change process.
Organisation had a management structure that supported Project Execution	Yes	Positive	The IT initiative was delivered under the Africa Business Units which performed all operations within a different management structure to the Group's other business units. Initial Project prioritisation, scope and budget decisions were made via a well-established IT Change Committee. Once approved the project decisions were then taken up via the Projects Programme Board, which was chaired by the Executive Sponsor. Single accountability for decision making was present even though consultative debates were entertained.
Organisation/Business Politics did not influence decisions made on the project	No	Negative	Business Politics were prevalent, and impacted the BPR project in a negative manner until all approvals and decisions were escalated to the Executive Sponsor.
Organisation had a high change adoption rate	Yes	Positive	BPR concepts were understood and accepted. Changes were aggressively managed as part of the larger IT Programme resulting in a high adoption rate.
Organisation had stable, standardised tools for business process analysis and design	Yes	Positive	Project Team documented all work on the ARIS toolsets. This was mandated by the standardised toolsets used for IT projects and the BPR project had to comply as it formed part of an IT initiative.
Organisation had a strong relationship with delivery partner/vendor	Yes	Positive	Organisation had strong stable relationships with selected delivery partners and vendors. There was no evidence to the contrary.

New Project Influential Factors			
Factor	**Present in Project**	**Positive or Negative Influence**	**Comments**
Organisation Functions/ Operations Structure was stable during the execution of the project	Yes	Positive	The Organisation Functions and Operational Structures were stable.
Single point of accountability and decision making was applied on the project (inherent within organisation management structures)	Yes	Positive	This factor links with the Organisational Management Structure factor.
Executive Sponsor for the project remained stable	Yes	Positive	There was only a single Executive Sponsor for the entire IT initiative under which the BPR work was executed. This did not change during the course of the project.


28 Feb, 2012
Project Re-scoped as a Programme
2 Projects to be Delivered
6 Mar, 2012
Project B Draft Approach
and Scope Distributed
23 Mar, 2012
Project A As -Is
Analysis Signed off
29 Mar, 2012
Project A As-Is
Analysis Continues
February 12
Project A
Scope Defined
29 Feb, 2012
Project B Requirements
Discussions
initiated
16 Mar, 2012
Project B Project Charter
And BCD due Date
27 Mar, 2012
Project B
Project Charter
Revised
5 Apr, 2012
Project B
6th Project Charter
After Initial Approval
19 Jan, 2012
Buy-in Discussions
initiated
10 Nov, 2011
Project A
Discussion Initiated
11 Apr, 2012
Project B
Budget Approved for
Project Charter and BCD
31 May, 2012
Project A Completed
As-Is Processes Only
November 11
December 11
January 12
February 12
March 12
April 12
May 12
June 12
July 12
July 12
31 Jul, 2012
Project B New
Delivery Dates
As-Is Processes
and As-Is Metrics
13 Dec, 2011
Executive Discussion
on Possible projects
6 Feb, 2012
Project A
Initial Planning Meeting
28 May, 2012
Project B replanned
1 Mar, 2012
Project B - Executives Disagree
on Scope and Approach
11 Apr. 12
Project A Sponsor
Approves Funding
30 Apr, 2012
Project A As-Is Analysis
Revised Due date
20 Mar, 2012
Project B
Project Charter
10 Feb, 2012
Project A Draft Project
Charter
20 Apr, 2012
Project A Initial Delivery Date
for As-Is Processes
8 Mar, 2012
Project B –
Work Commenced.
23 Mar, 2012
Project A
Business Case
Complete

Appendix C: Email Listing of Field Work Performed

Date	Email Subject Line	Project Reference	Brief Description	Comments
5-Oct-11	Information Please	N/A	Request from the Head of the Process Improvement business unit to provide me with information for the PhD case study work	PhD Pilot case study began at this point
10-Oct-11	Discuss Improvement Initiatives	1 and 5	Workshop set up to discuss projects within the Process Design and Improvement business unit	Executive sponsors declined meeting
7-Oct-11	Project Schedule v1 2.mpp	N/A	Project schedule template was shared	Evidence of Six Sigma methodology being used
10-Oct-11	Discuss Improvement Initiatives	5	Meeting with executive manager heading up the customer service operational business unit	Obtaining Executive buy-in for commencing with BPR project
10-Oct-11	Look in the six sigma Section for tools and for methods	N/A	Link to Methods Portal	Evidence of Six Sigma and LEAN methods being used
12-Oct-11	PMT for Six Sigma Projects	N/A	Project tracking tool configuration	Evidence of Six Sigma being the default standard to be applied to all BPR type projects
19-Oct-11	*Project 5* Requirements - High Level Focus Points	5	Meeting used to discuss business requirements	Meeting was focused on business requirements and getting buy-in for proceeding with projects
19-Oct-11	*Project 1* Requirements - High Level Focus Points	5	Meeting used to discuss business requirements	Executive sponsor declined meeting
18-Oct-11	Project Plan for *BPR Business Unit*	N/A	Standard project plan template questioned	Process design business unit Head does not agree on the standard Six Sigma project plan template
24-Oct-11	*Project 1* Requirements - High Level Focus Points	5	Meeting used to discuss business requirements	Meeting was focused on business requirements and getting buy-in for proceeding with projects - Buy-In was very weak. Alternate projects were driven from other areas to deliver on similar objectives
20-Oct-11	Checkpoint Report 2011-1--20.doc	1 and 5	Progress report on projects	Evidence of decisions and work performed
24-Oct-11	*Project 5* Initiation Meeting 1	5	High Level requirements discussion with executive sponsor	Executive provided strong support initially. Highlighted many other projects which were performing work in the area, inclusive of BPR type work

Date	Email Subject Line	Project Reference	Brief Description	Comments
25-Oct-11	*Project 1* Requirements - High Level Focus Points	5	Meeting set up to continue executive buy-in discussion	Executive sponsor declined meeting
25-Oct-11	copy of minutes from daily meeting	1 and 5	Progress report on projects	Evidence of decisions and work performed
25-Oct-11	notes	1	Minutes of meeting with Executive	Evidence of decisions and work performed
25-Oct-11	Notes from meeting	5	Minutes of meeting with Executive	Evidence of decisions and work performed
25-Oct-11	Financial Sign off and Investment Appraisal for Business Cases	All	Decision taken to have the Finance Head included as an approver for the Business Cases	Found that stakeholders were not constant in terms of sign off' s for deliverables. Different stakeholders approved different components of the documents. This created a web of indecision and complex stakeholder engagements for project team
25-Oct-11	Project Charter *Project 5*	5	Draft copy of project charter produced containing only requirements	Draft copy of project charter produced containing only requirements
26-Oct-11	Checkpoint Report for 2011-10-26	1 and 5	Progress report on projects	Evidence of decisions and work performed
26-Oct-11	Communication - Draft for Time and Motion Study	1 and 5	Message to send out to business areas impacted to support the project and the teams	Buy-in for pursuing the projects was very weak
27-Oct-11	Communication - Draft for Time and Motion Study	1 and 5	Project manager hesitant to engage with business due to lack of buy-in	Project manager hesitant to engage with business due to lack of buy-in
27-Oct-11	*Business Unit X* TOM	1 and 5	Initiative that was performing similar work at a strategic level	Executives from different business units were all focusing on the strategic drive to reduce costs. This led to many projects being kicked off that were overlapping each other in some form or fashion.
28-Oct-11	Current Impacts/Risks to BCD completions	1 and 5	Risks were raised on duplication of work and executive buy-in very early in the projects	This was ignored by the executive sponsors and the executive for the BPR business unit
3-Nov-11	Benefits Discussion	1 and 5	Discussion with Head of BPR business unit	Due to lack of buy-in all work had to go through numerous internal reviews before being discussed with the business stakeholders and executive sponsors
3-Nov-11	Benefits Discussion for *Project 5* BCD	5	Meeting to discuss financial benefits of pursuing the project	Executive Declined Meeting. Initially strong buy-in thereafter due to discussions with other executives buy-in turned out to be very weak

Date	Email Subject Line	Project Reference	Brief Description	Comments
31-Oct-11	Benefits Discussion	1	Meeting to discuss financial benefits of pursuing the project	Executive only attended the first hour
31-Oct-11	Checkpoint Report for 2011-10-31	1 and 5	Progress report on projects	Evidence of decisions and work performed
1-Nov-11	Checkpoint Report for 2011-11-1	1 and 5	Progress report on projects	Evidence of decisions and work performed
2-Nov-11	Launching the ability to run and improve your processes - proposal	1 and 5	Discussion to introduce 2 month initiatives that will prove the value add of Business Process Reengineering.	Due to lack of buy-in at all levels of management a lot of engagements had to take place to prove the value add for BPR. This decision changed the execution approach for the Business Cases and had to be reworked to include shorter initiatives that could realise benefits in a shorter time frame.
2-Nov-11	*Project 1* Architecture	1	Example of duplication of work with two different projects trying to achieve the same object.	As time progressed it was found that IT was performing similar projects with an IT focus to achieve the same strategic goals as the Business Process Reengineering team were trying to achieve.
2-Nov-11	Project Charter *Project 1*.doc	1	Draft Project Charter completed only inclusive of requirements	Even though the decision was taken to do the Business Cases first it was found that you could not do it without getting the Project Charter completed first. It was a good example of how Management dictatorship led to a lot of unwanted team frustration and rework
3-Nov-11	Estimated Costs for the 3 BCD's & projects	1 and 5	First request for project funding sent to Investment Committee	Work was being performed on the Project Charter's and Business Case's without allocated funding
3-Nov-11	RE: Benefits Discussion	1	Executive provided more information on the IT run project	More evidence on disparate projects performing the same work from different perspectives
3-Nov-11	Checkpoint Report for 2011-11-03	1 and 5	Progress report on projects	Evidence of decisions and work performed
3-Nov-11	RE: FTS Report:	5	Discussion on integrating outlying projects into this project	Evidence of business politics and lack of buy-in both internal to project team and executive stakeholders

Date	Email Subject Line	Project Reference	Brief Description	Comments
3-Nov-11	*Project X* initiative	1	Smaller outlying projects were being requested to integrate into the bigger project	The small outlying projects were looked at as strategic interventions to show value of Business Process Reengineering by delivering them as short interventions under the bigger project
3-Nov-11	*Project 5*	5	Sponsorship and requirements was not clearly understood	It became apparent that sponsorship and requirements were being debated at executive level without project team involvement
3-Nov-11	Re: *Project X* initiative	5	More projects were being highlighted as performing similar work	Many stakeholders that were met by the project teams, resulted in finding more projects that were performing similar work to each other and this project in particular
4-Nov-11	*Project 5* Approach.ppt	1 and 5	Internally the project teams realised that even the internal projects were overlapping with each other's deliverables	Risks that were ignored previously was now starting to creep into the projects that were run within the Process Design and Improvement business unit
4-Nov-11	Checkpoint Report for 2011-11-04	1 and 5	Progress report on projects	Evidence of decisions and work performed
7-Nov-11	RE: *Project 7* RIE initiatives	7	Project discussion initiated	
9-Nov-11	*Project 7* end to end discussion	7	Discussion with project team members on project	Evidence of volatile business environment at an executive and senior management level
7-Nov-11	*Project Y* Project manager	1	Information on overlapping projects requested	Further evidence that smaller projects were being run independently by various other sponsors that impacted the delivery of this project
7-Nov-11	Latest Project Charter Payments	5	Project Charter was revised after numerous discussions	The discussions around overlapping projects and the decision to change the project execution approach to include Rapid Improvement Events led to delays in the project charter being produced

Date	Email Subject Line	Project Reference	Brief Description	Comments
7-Nov-11	Project Charter *Project 1*.doc	1	Project Charter was revised after numerous discussions	The discussions around overlapping projects and the decision to change the project execution approach to include Rapid Improvement Events (RIE) led to another draft project charter. Once again it was delayed and did not meet original timelines
7-Nov-11	RIE_Work_BreakdownStructure.xlsx	All	Template Plan for conducting a Rapid Improvement Event	Evidence of LEAN/Kaizen principles being used
7-Nov-11	Checkpoint Report for 2011-11-07	1 and 5	Progress report on projects	Evidence of decisions and work performed
2&8 -Nov-10	FW: Time required with *Board Executive*	All	Request for Executive Project Committee to be set up	Due to all the conversations around requirements, overlapping projects, and inconsistency of sponsorship an executive committee was requested
8-Nov-11	Minutes *Project 5* 2011-11.08.doc	5	Minutes from meeting held to discuss overlapping scope on different projects	Executives were called to clarify scope across overlapping projects. This was after the Project Charter was produced.
8-Nov-11	Checkpoint Report for 2011-11-08	1 and 5	Progress report on projects	Evidence of decisions and work performed
9-Nov-11	RE: RIE Workshop20111110.pptx	All	Workshop set up to discuss the Rapid Improvement Event impact on the projects as well as execution approach	Due to lack of buy-in other options were strongly pushed at business to adopt, in order to prove the value of Business Process Reengineering
9-Nov-11	RE: *Project 5* 2011-11.08.doc	5	Line management refusal to acknowledge that risks raised were ignored.	Project teams were held accountable for decisions taken by executives, including line management
9-Nov-11	Checkpoint Report for 2011-11-09	1 and 5	Progress report on projects	Evidence of decisions and work performed
9-Nov-11	Project Charter *Project 1*.doc	1	New version of Project Charter produced	During the course of the weeks it was found that due to the confusion created by many executives around scope and sponsorship that many versions of the Project Charter were produced.

Date	Email Subject Line	Project Reference	Brief Description	Comments
9-Nov-11	RE: Project Charter *Project 5*.doc	5	New version of Project Charter produced	During the course of the weeks it was found that due to the confusion created by many executives around scope and sponsorship that many versions of the Project Charter were produced.
9-Nov-11	Fw: Priority Processes - *Business Unit X*	All	Lack of management focus	Due to indecisiveness and lack of focus management always puts pressure on project teams to produce deliverables before planned due dates
9-Nov-11	RE: Project Charter *Project 1*.doc	1 and 5	Head of Process Business Unit dictating way forward	It was found that the project manager on the projects did not have decision making accountability for deliverables. The Head of the Process Business Unit wanted to decide what goes into the Project Charter irrespective of sponsorship requirements.
10-Nov-11	Project Charter *Project 1* DRAFT FEEDBACK 2011-11-09.doc	1	Head of Process Business Unit dictating way forward	It was found that the project manager on the projects did not have decision making accountability for deliverables. The Head of the Process Business Unit wanted to decide what goes into the Project Charter irrespective of sponsorship requirements.
10-Nov-11	Business Case Project 5 FEEDBACK 2011-11-09.doc	5	Head of Process Business Unit dictating way forward	It was found that the project manager on the projects did not have decision making accountability for deliverables. The Head of the Process Business Unit wanted to decide what goes into the Project Charter irrespective of sponsorship requirements.
10-Nov-11	Workshop: Define the scope of the initiative and plan the execution of the RIE pilots.	1 and 5	Meeting to gather more buy-in for Rapid Improvement Event execution approach	More buy-in engagements taking place to prove value of Business Process Reengineering

Date	Email Subject Line	Project Reference	Brief Description	Comments
10-Nov-11	RE: The BCD Team - Recognition for the 17th	1 and 5	Recognition was provided for the project teams.	Due to the numerous executive engagements impacting the project deliverables, the team was getting frustrated. To get the team motivated recognition was submitted for the team.
10-Nov-11	Updated Project Charters	1 and 5	New version of Project Charter produced	This time the project charters were produced to satisfy the Head of the Process Business Unit
14-Nov-11	Checkpoint Report for 2011-11-14	1 and 5	Progress report on projects	Evidence of decisions and work performed
14-Nov-11	FW: Project Charter *Project 5* v1.0	5	Business Executive requesting to meet to discuss project charter	It was found once again that there were very different views amongst the executives when it came to scope
15-Nov-11	RE: Project Charter's Sponsor Sign Off	1 and 5	Project Charters were signed off	After numerous iterations of project charters, they were finally signed off.
15-Nov-11	Checkpoint Report for 2011-11-15	1 and 5	Progress report on projects	Evidence of decisions and work performed
16-Nov-11	Accepted: Discuss Consolidation of Metrics and As Is Dashboards	1	Meeting to discuss Metrics Capability deliverable	Even though the Business Case was incomplete and there was no allocation of funding work on the metrics framework continued
16-Nov-11	Fw: Checkpoint Report for 2011-11-15 - *Project 1 and 5*	1 and 5	Board Executive requesting for no team appointments and work to be executed until he signs off	More business politics at play between business unit executives.
17-Nov-11	Re: Delivery 2011	1 and 5	Email discussion between Business unit heads	More business politics at play, this time between the business unit heads
21-Nov-11	Checkpoint Report for 2011-11-21	1 and 5	Progress report on projects	Evidence of decisions and work performed
22-Nov-11	Checkpoint Report for 2011-11-22	1 and 5	Progress report on projects	Evidence of decisions and work performed
25-Nov-11	BCD internal walkthrough - *Project 1 and 5*	1 and 5	Draft Business Case was reviewed with project teams	
23-Nov-11	RE: Discuss Consolidation of Metrics and As Is Dashboards	1	Metrics Framework work goes steaming ahead	Still no BCD and approved funding yet work continues
23-Nov-11	*Project X* and *Project Y* Roadmap	5	Projects that are directly impacting and duplicating this projects work	Once again it was found that various executives were performing similar work to achieve the same outcomes.

Date	Email Subject Line	Project Reference	Brief Description	Comments
24-Nov-11	FW: Global *Projects* presentation	N/A	Strategic initiatives presented	Business executives have independent discussions without project representation
24-Nov-11	RE: RIE Topic	5	Discussion on overlapping work across Business Process Internal projects	Even Internal to the business process unit, senior managers were duplicating work effort
24-Nov-11	RE: Business Case Project 1 v0 2	1	Business Case distributed for review	Head of Process Business unit forces project team to look for quick win benefits even when project only realises benefits after a project implementation.
24-Nov-11	RE: Presentation Packs	1	Discussion on various business unit approaches towards deliverables	More business politics at play
1-Dec-11	BCD Integration points	1 and 5	Meeting to discuss duplication of effort on other projects as well as all dependencies and impacts created	Project teams decided to ensure that they highlight all the projects that are happening that are delivering similar work. This was however later ignored by all executives. More business politics
28-Nov-11	Checkpoint Report for 2011-11-28	1 and 5	Progress report on projects	Evidence of decisions and work performed
28-Nov-11	FW: Business Case Project 1 v0 2 Person X and Person Y.doc	1	New version of Business Case produced	It looked like the Business Case would go through the same contentious issues as the Project Charter's went through
28-Nov-11	Business Case Project 5 v0.3	5	New version of Business Case produced	It looked like the Business Case would go through the same contentious issues as the Project Charter's went through
29-Nov-11	RE: Checkpoint Report for 2011-11-15 - *Project 1 and 5*	1 and 5	Email discussion on Business Case deliverables	More Executive management politics that places undue pressure on project teams
29-Nov-11	Business Case *Project 1* v0.4Updates.docx	1	Business Case revised	Many version or the Business Case was being produced to cater for various executive management feedback. Generally not all saw the same picture.
29-Nov-11	CIB Project 1 BCD Feedback	1	Confirmation of business buy-in	Confirmation of business buy-in
30-Nov-11	RE: RIE process initiatives	1	Scope being contended	First signs that scope will be changed to exclude internationally based customer service centres
2-Dec-11	RE: *Project 1* Business Case 0112011.ppt	1	No feedback on Business Case sign off from sponsor	It became apparent the buy-in was very erratic.

Date	Email Subject Line	Project Reference	Brief Description	Comments
2-Dec-11	RE: Business Case *Project 1* v.1_ 30112011	1	Multiple emails were sent for sign off feedback	It became apparent the buy-in was very erratic.
2-Dec-11	Focus for the next two-three weeks	1 and 5	Head of Process Business Unit dictating way forward	It became obvious that the project managers were not being left to be accountable for performing their jobs. Various discussions outside the project meetings were being held and decisions being taken on behalf of the projects
2-Dec-11	FW: Next Steps - Scope of Work	1 and 5	Project direction been given by non-project managers.	Even though the projects were in the process of getting the Business Cases signed off, other managers were influencing the project work and direction
2-Dec-11	Business Case Review	1	Business Case sent for sign off	
5-Dec-11	RE: Business Case *Project 1* v.1_ 30112011	1	Business Case agreed to be signed off	
5-Dec-11	RE: Business Case Review	5	Business Case feedback given.	No signs that it will be signed off
6-Dec-11	RE: Changes Required	5	Benefits for project being disputed	The project was in danger of being stopped due to not having enough financially quantifiable benefits
7-Dec-11	*Project 1*- Business Case	1	Final version of BCD sent for sign off	This was not the final version
8-Dec-11	Business Case and Presentation	5	Final version of BCD sent for sign off	This was not the final version
8-Dec-11	*Project 1 and 5* Combined Summary v 1_08122011.pptx	1 and 5	Executive sponsor feedback on Business Cases	Business Case not yet signed off. More input received from senior executive in charge of all business units.
12-Dec-11	*Project 1* Business Case - Performance Design & Improvement	1	Business Case approved	This later turned out to be pen on paper. All approvals were later overturned or revoked.
12-Dec-11	Information	5	Benefits for project being revised	Due to various contentions on the benefits for executing the project, the project team had to work out various scenarios on the benefits to build a Business Case.
12-Dec-11	Business Case *Project 5* v0 9	5	Revised Business Case produced	This was the 9th version of the Business Case
13-Dec-11	Fw: *Project 3* - Process Analyst Requirement	3	Request for process design resource for a project	Project discussions initiated
13-Dec-11	RE: *Project 3* - Process Analyst Requirement	3	Resources being approved for projects	Resources are being approved for on boarding based on verbal discussions only.

Date	Email Subject Line	Project Reference	Brief Description	Comments
13-Dec-11	FW: *Project 7*	7	Further discussions on projects	Executives discussing possible projects
15-Dec-11	Investment committee Excel Pack.xlsx	N/A	Document on a proposal for an investment committee	It was later found that there existed no investment committee that could approve funding for the projects
22-Dec-11	Progress Update: *Project 1 and 5*	1 and 5	Work progress on metrics framework	No Funding being approved. No signed off BCD for project number 5, yet resources were busy on delivering the metrics framework
10-Jan-12	*Project 1* - 1 Pager	1 and 4	Scope of Project 1 being split	Scope of Project 1 split. Business Case required revision which did not occur.
11-Jan-12	Planning	4	Meeting held for the planning of the project	First meeting session. It was found that new stakeholders would be required to co-sponsor and agree on scope and way forward. Same issues on overlapping projects were identified.
11-Jan-12	*Project 1*-Current state definition split	1	Work load distribution	More work commencing on project. No funding yet approved
12-Jan-12	FW: Business Case Event Based Reporting 4.doc	1	Projects being initiated that duplicate work effort	Projects being initiated that duplicate work effort
12-Jan-12	*Project 1* OverviewV3.xlsx	1	More projects being identified as duplicating work	This was ignored once again by executive stakeholders
16-Jan-12	*Project 1* minutes	1	Minutes of meeting	
16-Jan-12	BPM Approach for *Project 3*	3	Resource identified for project- POC was put forward on new approach to Perform BPR	While projects were on the run a new approach was being put forward to perform BPR
17-Jan-12	*Project 1* minutes 17012012	1	Minutes of meeting	Evidence of decisions and work performed
19-Jan-12	Urgently send me the final BCD's for *Project 1 and 5*	1 and 5	Business Cases were requested for further debate	The Business Cases were now under further debate by various executive stakeholders
19-Jan-12	RE: Business Case *Project 1* v 1_fnl	1	Project deliverables are being duplicated by another project	Risks identified of duplication of work that were ignored by management earlier were now being realised.
19-Jan-12	Can *Person X* not take on the *Project 3* Process Analyst work	3	New Resource for project requested	Project was being run as part of a bigger program. Not much information was being received

Date	Email Subject Line	Project Reference	Brief Description	Comments
19-Jan-12	RE: Business Case *Project 1* v 1_fnl	1	Different views on duplication of work effort	Due to the number of projects that were going on and the fact that multiple executives were performing their own projects it was difficult to get a single view of the truth
19-Jan-12	Board Update Version 2 [Recovered].ppt	All	Business Process project board minutes	Evidence of decisions and work performed
19-Jan-12	RE: Meeting With *Person X*	7	Email discussion on preparation to meet Executive Sponsor	Work was commencing to prep and get buy-in for performing BPR work in the respective business unit
20-Jan-12	*Business Unit* Programme Board Update 20110119 (2).ppt	1 and 5	Minutes of Process Project Board Meeting	Evidence of funding agreed to. Evidence Project BCD's approved
20-Jan-12	*Project4* minutes 19012012.doc	4	Minutes of meeting	Evidence of decisions and work performed
23-Jan-12	*Project 4* docs	4	Previous projects documentation distributed	An initial project created in August 2011 to execute on the same objectives was performed in the international space. This was later abandoned. Reason was restructuring of division.
25-Jan-12	Checkpoint Report for 2012-01-25	1	Progress report on project	Evidence of decisions and work performed
26-Jan-12	FW: Shared Services Utility Workshop - Workshop Minutes	1	Strategy to restructure entire business unit was impacting on projects.	All work done on the Business Case had to be revised and revisited to show impact of cost and benefits
27-Jan-12	Rapid Improvement events	1	Buy - In for the Rapid Improvement Event approach	There was strong buy-in to perform the Rapid Improvement Event type approach.
31-Jan-12	Checkpoint Report for 2012-01-30	1	Progress report on project	Evidence of decisions and work performed
3-Feb-12	*Project 4* 6 SIGMA Express projects.xlsx	4	First draft Project Charter released	
6-Feb-12	Planning for *Project 7*	7	Meeting where scope of BPR work discussed	The project team was to form part of a larger IT program delivering a new core banking platform.
7-Feb-12	Board Update 20120130.ppt	All	Minutes of Process Projects Board meeting	Evidence of decisions and work performed
7-Feb-12	Re: *Project 4* Project Charter.xlsx	4	Feedback from review of document	The executive sponsor asked to appoint a co-sponsor. This made scope and budget discussions very complicated.
7-Feb-12	FW: *Project 4* as-is update	4	As-Is Analysis update	As -Is analysis started even though scope and budget has not been finalised

Date	Email Subject Line	Project Reference	Brief Description	Comments
7-Feb-12	*Project 4* Governance	4	Project Governance Framework requested to be established	Due to the complex nature of stakeholder locations and engagements a governance framework had to be set up. This was to make sure the primary sponsor was happy before anything was taken to the internationally based team and Co-Sponsor
7-Feb-12	RE: *Project 7* Planning	7	Minutes of planning session	Scope finalised to include only documentation of As-Is processes and definition of To-Be processes. No implementation as part of scope. This was to be executed by the IT business analysts
8-Feb-12	*Group Executive*_Update.pptx	1	Risks to be raised with Executive sponsor on business restructure impact.	The risk was disputed as to the impact. Impact was later realised with new versions of Business Cases been created for various other executive stakeholders
6-Feb-12	Checkpoint Report for 2012-02-06	1	Progress report on project	Evidence of decisions and work performed
10-Feb-12	*Project 4* Project Governance.doc	4	Governance document distributed	Governance document distributed
10-Feb-12	RE: *Project 4* Project Governance	4	Example of difference in executive opinion	Example of difference in executive opinion
10-Feb-12	*Project 7* Project Charter	7	Draft Project Charter produced	
12-Feb-12	*Project 7* - Draft Project Plan	7	Draft project plan	Project 7 proposed planning
13-Feb-12	Shared Services Utility - Presentation *XXX* Investment Committee meeting 13 Feb 2012	N/A	Business Unit restructure presentation	Business conducts independent strategic restructures without project representation
14-Feb-12	Checkpoint Report for 2012-02-14	1	Progress report on project	Evidence of decisions and work performed
14-Feb-12	Project 4 Discussion points	4	Minutes of previous meetings	As-Is analysis being conducted without approved funding. Highlighted duplication of work from other projects
15-Feb-12	FW: *Project 4* minutes 14022012.doc	4	Minutes of previous meetings	Evidence of decisions and work performed
15-Feb-12	Project Costing and NPV calc without ROA and Int	1 and 4	Revised Business Case financials	Due to splitting of scope the Business Case had to be revised
20-Feb-12	Checkpoint Report 2012-02-13.doc	1	Progress report on project	Evidence of decisions and work performed

Date	Email Subject Line	Project Reference	Brief Description	Comments
20-Feb-12	FW: *Project 2* Process modelling	2	Project discussion initiated	
27-Feb-12	Discuss *Project 2* Process Modelling	2	Project meeting held	This was also an IT system replacement project that required BPR type work to be performed.
21-Feb-12	*Project 4* Project Team minutes 21022012.doc	4	Minutes of previous meetings	Evidence of decisions and work performed
22-Feb-12	E-mail to be sent out for sign off of As-Is processes	1	Sign off request for As-Is documents	Work continues even though Sponsorship, Scope and Budget under contention
23-Feb-12	OIC Funding Required	1 and 5	Funding requested for projects	Initial funding approval was revoked as executive sponsor denied approving funds. Comment was only approved BCD to go for funding requests. It was an exhaustive exercise to get funding for the projects. Funding was becoming an issue as executives were now focusing on other priorities due to structural changes.
24-Feb-12	*Project 4* Project Team minutes 21022012.doc	4	Minutes of meeting	Evidence that BCD has been initiated.
24-Feb-12	FW: *Project 1, Project 5, Project X*	1 and 5	Africa Regions de-scoped	Africa Regions de-scoped due to duplication of work being conducted by alternate project. This was continuously highlighted to executive management which was ignored.
28-Feb-12	FW: *Project 7* workshop: Follow up discussion	7	Project became a program that was required to execute on various projects.	Two projects were running within this program as of now.
28-Feb-12	Checkpoint Report 2012-02-27	1,5,6,7	Progress report on projects	Evidence of decisions and work performed
28-Feb-12	Project Kick Off 20120227 (2).pptx	6	Project Initiation document highlighting the BML execution approach and deliverables for project	POC for the BML approach was run by the company that owned the tool.
28-Feb-12	FW: Alignment of Process Standards	All	Impact of restructure and duplication of work was formally raised by an executive not part of the stakeholder engagement on the projects	This once again was disputed. It was about business politics, personal agendas and ego's. No one wanted to take ownership of this issue.

Date	Email Subject Line	Project Reference	Brief Description	Comments
29-Feb-12	RE: Business Case and Plan	2	The BCD and Plan was distributed	After analysis it was found that this was an IT project that did not consider Process. Only 1 task was dedicated to delivering the As-Is and To-Be processes. No implementation was required of Process team.
29-Feb-12	RE: Business Case and Plan	2	Trail of emails on budget, approach and resource allocation	Initial budgets, efforts and scope agreed to
29-Feb-12	Meeting with *Person X*	7	Request from Project Manager to one executive to help meet another executive	It was a very hostile environment to work in, due to lack of buy-in and difference in opinion amongst executives.
7,9-Mar-12	VSAM Planning Sessions	1	Workshop setup to select priority processes for VSAM analysis	VSAM analysis on As-Is processes was initiated
1-Mar-12	Support for RIE	N/A	POC on RIE approach was implemented	The POC to prove the value on BPR type work was being implemented
1-Mar-12	RE: *Project 7* Scorecard Feedback	7	Project B - Discussion on different executive views	More executive management politics that disconnects organisation objectives from own agendas.
1-Mar-12	FW: *Project 1* SA Heads	1	VSAM sessions with Business Executives set up	VSAM sessions with Business Executives set up
2-Mar-12	Current State Analysis - Metrics	1	Baseline Metrics Document delivered	Deliverables on project was going well at this point.
3-Mar-12	FW: Work on production of processing blueprint(Core Banking)	N/A	More projects kick off	More duplication of work being initiated. What was interesting, was that these were the same executives that were part of projects under the case study scope
3-Mar-12	FW: *Project Y* - Process Design Stream	1 and 5	Discussions initiated at Executive level around restructure and funding impact	There was an impact on funding for these projects due to the restructure. New Executives were becoming sponsors. There was new interest in the BCD's produced.
6-Mar-12	Please review - thanks	7	Project B draft approach document distributed	
6-Mar-12	RE: Update	1 and 5	Updates on projects	Evidence of work completed
6-Mar-12	*Project Z* evaluation criteria	1 and 5	Alternate project evaluation criteria	More confusion around scope and duplication of work being created from various projects
6-Mar-12	Re: Way Forward	1	Confirmation of scope	The impact of duplication of work across various projects was still being ignored at an executive level.

Date	Email Subject Line	Project Reference	Brief Description	Comments
6-Mar-12	Lean Six Update	1 and 5	Funding to be requested for projects	Funding has been a major issue on the projects. It toggled from approved to not being approved continuously. At this point project teams became frustrated and talk within the team around resignations became very rife.
8-Mar-12	FW: *Project Y* Scorecard Feedback	7	Project B work to commence irrespective of confirmed scope and funding	It seemed a common occurrence that work commenced on projects even though there was no agreement on scope and funding. This was not driven by the sponsor but rather from line management
12-Mar-12	*Project X* - Process Discussion	1 and 5	Project Teams Meet to discuss overlapping of work	Project Teams decided to ensure that overlapping of work was discussed and resolved as executive management was ignoring this issue
12-Mar-12	RE: Checkpoint Report 2012-03-12	All	Progress report on projects	Evidence of decisions and work performed
13-Mar-12	*Project Y*- progress	7	Progress report on project	Evidence that BCD and Project Charter for project B will be delivered at the same time and due date.
14-Mar-12	RE: ISO	N/A	Different methodologies lead to rework	Inconsistent methodology application for Process work led to rework
14-Mar-12	RE: Way Forward -	1	Line management making decisions on behalf of projects	VSAM sessions were proposed to be stopped by line management due to discussions held independent of project team.
19-Mar-12	*Project 1* Business Case review	1 and 5	BCD reworked	Due to restructure and lack of funding BCD was being reworked
20-Mar-12	Review BCD	1 and 5	Review BCD	Original signed off BCD's was disputed within the new structure. This started numerous rework and benefit - value discussions on the projects
20-Mar-12	Feb highlights	all	Executive progress feedback	It was highlighted that funding was an issue. Project 6 As - Is analysis was stopped in favour of developing a target state view.
19-Mar-12	Change Request CS	1	Change Request submitted to rework BCD	Finally management agreed that the restructure and number of projects have an impact on this project

Date	Email Subject Line	Project Reference	Brief Description	Comments
19-Mar-12	Change Request_PMTS	5	Change Request submitted to rework BCD	Finally management agreed that the restructure and number of projects have an impact on this project
20-Mar-12	Project Charter *Project 7* V1 2	7	Project Charter for Project B distributed	Scope was limited to defining a metrics dashboard only due to limited funding
20-Mar-12	*Project 4* Weekly Project Meeting	4	As-Is analysis delayed by two weeks	As-Is analysis delayed by two weeks due to projects overlapping work
20-Mar-12	Project Charter *Project 5* 20032012	5	The Project had to re-start from Project Charter	There was no buy-in from the business executive as to the value of the work. This led to the project restarting to prove the value.
20-Mar-12	Project Charter *Project 1* 20032012	1	The Project had to re-start from project charter	There were now two executive sponsors representing business requirements. This led to the project restarting at the project charter stage
21-Mar-12	RE: *Project 1* Project Charter	1	Difference in opinion on the scope and outcomes	Due to various differences in opinion around scope and objectives, there were many versions of the Project Charter and BCD
22-Mar-12	Project Charters	1 and 5	Meeting to discuss why projects restarted	Executive refused to acknowledge their part in the project issues thus far. The Project Managers were held fully accountable.
22-Mar-12	RE: project charters for *Project 1 and 5*	1 and 5	Project Charters were under revision again	Project Charters were under revision again
23-Mar-12	Checkpoint Report 2012-03-23	All	Progress report on projects	Evidence of decisions and work performed
25-Mar-12	CI in *Business Unit Y*	1 and 5	Executive management feedback	It was agreed that Project 5 currently did not have a strong Business Case. It was also agreed that Project 1 had a strong Business Case and would require funding.
28-Mar-12	RE: Six Sigma Project Charter and Business Case for *Project 1*	1	Review of Revised BCD	Another review on another BCD by business executives
27-Mar-12	RE: *Project 1* Weekly Project Meeting	4	Risk Raised - No Project Manager	Risk was raised that no PM was managing the project, hence the project was at risk of delivery. The problem was that neither sponsor was willing to fund as of this date.

Date	Email Subject Line	Project Reference	Brief Description	Comments
27-Mar-12	FW: Project Charter *Project 7* V1 4	7	Revised Project Charter	Another project were multiple versions of Project Charters were being produced while work was being done and no funding allocated.
27-Mar-12	RE: Budget - International	4	Risk - No Budget Approved	Risk - No Budget Approved
4-Apr-12	General Projects Discussion	All	Meeting between process project teams.	Project teams were becoming frustrated with the numerous executive indecisions. By August 2012 5 out of 6 Senior Project Managers resigned including some process team members. The Senior Manager responsible for the area also resigned
28-Mar-12	Re: CI in CIB	5	Executives Meet to discuss way forward	Different Sponsor allocated. Executives still could not come to an agreement in terms of scope.
28-Mar-12	CQM and MOS	5	Another project initiated that impacts this project	Another project initiated that impacts this project
28-Mar-12	Declined: Six Sigma Project Charter and Business Case for *Project 1*	5	Sponsor declines meeting to discuss revised BCD	It became apparent that due to the restructure there were other priorities that the executives were focussing on. Most of their priorities was on self-preservation within the organisation
29-Mar-12	As-Is Process Summary	7	Project A As - Is processes feedback	Project A As - Is processes feedback
29-Mar-12	RE: CI in *Business Unit Y*	5	New Sponsor feedback	New sponsor highlights other projects and duplication of work and lack of buy-in in terms of seeing value of process work verse IT system changes
2-Apr-12	Business Case presentations for *Person Y*	1 and 5	Project funds were being requested from Executive Line Management	It was interesting to find that no funding was being made available by the allocated sponsors of the project. This led to the project teams Line Executive being asked to fund the resources work effort and project delivery
3-Apr-12	*Project 4* Update	4	PM Allocated - BCD due date confirmed	PM Allocated - BCD due date confirmed
4-Apr-12	Project Charter *Project 1* 20120403	1	Revised Project Charter/BCD	Eventually the BCD and Project Charter where combined but was still called a Project Charter.

Date	Email Subject Line	Project Reference	Brief Description	Comments
4-Apr-12	RE: *Project 4* Update	4	Process Team pulled of the project. No Funding	Process Team pulled of the project. No Funding. This was a typical example of business politics; Due to lack of mutual understanding between executives certain actions were taken. This was so different in the other projects, where resources were working with no funding.
4-Apr-12	FW: *Project 5* charter 0.5.pptx	5	Project Charter revised and scope drastically reduced	Due to various contentions around the BCD. The scope was drastically reduced and the Project Charter was revised
5-Apr-12	Re: Project Charter *Project 1* 20120404_updated.	1	Project Charter review feedback	Executives still do not agree on scope and approach. Dual sponsorship was decided on due to the restructure
6-Apr-12	RE: *Project 3* Project Charter and Business Case and Project Plan	3	Feedback - No Project Charter and BCD Available	Process work was being done only to understand As-Is. It was run under an IT project. Information was very limited
5-Apr-12	RE: Do we have a high level plan for *Project 7*	7	Project B - Project Charter revised	So far 6 versions were produced after initial sign off
10-Apr-12	FW: *Project 3* Documents required	3	Latest Project Plan	Latest project plan was shared. The interesting note picked up from the plan, was that there was no BCD and Project Charter. The plan was also not followed. It was just used to fulfil governance. Also the process work only commenced in March 2012 while the project plan showed it starting in September 2011
10-Apr-12	RE: Recovery for Project Resources	4	Discussion on budget	Process Team pulled of the project. No Funding. This was a typical example of business politics, Due to lack of mutual understanding between executives certain actions were taken. This was so different in the other projects, where resources were working with no funding.

Date	Email Subject Line	Project Reference	Brief Description	Comments
11-Apr-12	FW: *Project 7* Improvement Programme	7	Project A was approved by sponsor to complete all work	Even though work has commenced, it was found that the sponsor did not approve work until now. The line executive was making decisions for work to commence.
11-Apr-12	FW: USS IS Summ RE1.xlsm	All	Latest budget approval status	Only certain project budgets were approved. It was also found that new Project Charters were being documented for Project 1 and 5.
11-Apr-12	Utility report	1, 4 and 5	Latest feedback on projects	New Project Charters sign off for the 17th April 2012. Project 4 funding approved for As-Is analysis only.
13-Apr-12	FW: *Project 5* charter	5	Discussion on project value between executives	The projects value and benefit realisation was disputed. IT was seen as the silver bullet to deliver solutions. Project soon after was stopped in favour of doing process analysis over a month to get detailed metrics.
16-Apr-12	FW: *Project 2* Documentation Walk-through	2	Project put on hold	
16-Apr-12	RE: Project Board Meeting (Lean Six Sigma)	1 and 5	Project Board cancelled due to debates on Business Cases and funding approvals	The debate on the Business Cases and confusion around funding was eventually leading to major failures within the projects. It also led to many frustrations within the project teams
17-Apr-12	FW: *Project 7* next steps	7	No feedback on Project B Project Charter from Sponsor.	
17-Apr-12	CI in *Business Unit Y*	1 and 5	Latest Executive Agreement	Project number 5 was stopped for further investigation - duration 1 month. Project number 1 was agreed to in terms of scope and sponsorship, no funding agreement was reached
24-Apr-12	*Project 4* Weekly meeting	4	Status feedback	As -is analysis being documented and BCD to start 11 May 2012 - for completion 18 May 2012

Date	Email Subject Line	Project Reference	Brief Description	Comments
2-May-12	RE: *Project 4* Update	4	Concerns raised on projects focus and direction	The project was in serious jeopardy as there was no executive focus and no direction. Project was escalated to Group Executive for non-delivery. Multiple emails went back and forth between executives. Unfortunately no commitment was made.
10-May-12	PICPEC May 2012-05-10 [Autosaved].ppt	All	Status feedback on Projects to Group Executive Investment Committee	All feedback was that projects were in green status. This was very interesting seeing all the events that have occurred over the last few months.
7-May-12	BCD *Project 1*	1	Unrealistic timelines were always forced on the project team irrespective of agreed planned dates with all stakeholders	The goal post was always moving because of the number of executives that were considered Board Approver's of the project. This made it very difficult for the project team to deliver quality products as they were constantly under pressure to keep bringing their timelines ahead of plan.
8-May-12	Business Case *Project 1* v 0.1_May2012	1	A new BCD produced	The project team eventually started a new BCD which was already revised 3 times
10-May-12	CI Investment and Portfolio Excecution Committee	All	A new Investment Committee set up with a new Executive Chair	
10-May-12	FW: Business Case - *Project 1*	1	More executive stakeholder changes	Resulting in delay in BCD signoff
11-May-12	RE: Business Case - *Project 1*	1	BCD Approved	Executives have approved the BCD. Only funding approval was left
22-May-12	FW: *Project 5* Current State Analysis	5	The 1 month Analysis report	Based on the report it was agreed that it did not make any sense to do a project.
28-May-12	Status reports on projects under your portfolio	7	Project number 7 status updates	Project A completed. Project B re-planned for 31 July 2012
28-May-12	Update	6	Status Update	Confirmation as to why project started late and completion of work. What was not mentioned was the project team infighting between the vendor and organisation which also delayed the project delivery date. The vendor replaced their resources in favour of keeping the contract.

Date	Email Subject Line	Project Reference	Brief Description	Comments
30-May-12	*Project 4* _Cash_Business _Landscape_V02.doc	4	As-Is Analysis completed - Confirmation and document	
4-Sep-12	Your thoughts on how to approach the banking of benefits for *Project 1*	1	New Team restarts the project	The project was restarted after 11 months of the original project kick off date

Appendix D: Email Listing of Reviews Performed

During the course of the PhD research a number of reviews were conducted. The list below reflects what was reviewed when and who conducted these reviews. These reviews formed part of the validity requirements for the research. A panel of reviewers was also constituted and is represented below:

- Supervisor: Prof Barry Dwolatzky
- External Auditor: Dr David Funchall
- Case Study Programme Manager : Kevin White
- Case Study Black Belt Six Sigma Consultant: Charles Parmar
- Case Study Black Belt Six Sigma Consultant: Srikanth Sriperumbudhuri
- Wits Project Management Lecturer: Barry Myburgh
- Banking Sector Business/Process Analyst : Erwin Ching-Sent

Date	Document Reviewed	Reviewer/s
21-Mar-12	Informed Consent Document	Reviewed by Organisation Executive
23-Mar-12	PhD Proposal	Panel
14-Apr-12	PhD Updated Proposal	Panel
14-May-12	PhD Proposal	The University PhD approval Panel
15-Oct-12	Deriving a Research Agenda	Panel
26-Feb-13	BPM Article 1	Panel
06-Mar-13	BPM Article 1	BPM Institute
12-Apr-13	BPM Article 2	Panel
13-Apr-13	BPM Article 2	BPM Institute
22-May-13	Deriving a Research Agenda	SAJIE Blind Review for Publication
22-Aug-13	BPM Article 3	Panel
07-Nov-13	BPM Article 3	BPM Institute
13-Feb-14	Thesis	External Auditor and Supervisor
25-Jul-15	Thesis	External Auditor and Supervisor
03-Oct-14	Thesis	External Auditor and Supervisor
10-Nov-14	Thesis	Supervisor

Appendix E: Organisational Consent

Organisation Informed Consent for Doctoral Case Study Research

Researcher - Imtiaz Abdul Kader – 442711

Organisation – Standard Bank

4 October 2012

Document Background

This document serves to provide the organisation with a brief overview of the research that is proposed to be conducted within the aforementioned organisation. It further serves as a contract between the organisation and the researcher in terms of:

- the handling of data
- the use of resources, inclusive of technology and people
- outlining and agreeing ethics and commitments

Data is considered Intellectual Property (IP) across all organisational paradigms therefore a descriptive brief is required to ensure that all ethical considerations are instituted accordingly, providing both the organisation and researcher a guideline encompassing ethics and resource usage.

This document does not serve the purpose of a Doctoral Proposal and as such will only provide information pertaining to the organisational requirements.

Contents

Document Background i
Contents ii
Glossary ii
1 Research Purpose 1
2 Participants Involved 1
3 Research Methodology 1
4 Commitments 2
5 Ethical Considerations 2
6 Queries and Approval 3

Glossary

IP	Intellectual Property
BPR	Business Process Re-Engineering
CI	Continuous Improvement

1 Research Purpose

The purpose of the research is to explore **B**usiness **P**rocess **Re**-Engineering (BPR) and **C**ontinuous **I**mprovement (CI) methodologies within a financial service organisation under the auspices of the aforementioned organisation, leading to an improved characterisation of BPR and CI methodologies hence facilitating change in future implementations.

2 Participants Involved

The major participants will be limited to the organisation and researcher. Subsidiary participants contained within the organisation will be limited to mutually agreed BPR programmes of work.

The research will be conducted by Imtiaz Abdul Kader, a first year doctoral student at Wits University. The researcher is an employee of the organisation and as such will maintain the ethical and confidential perspectives accordingly.

The organisations participation is exclusively voluntary and can be withdrawn at any time. The researcher also reserves the right to include alternate organisations and exclude any aforementioned organisational participation.

3 Research Methodology

A number of research methods will be employed; inclusive of participant observation and document analysis. The researcher will be involved in the BPR programmes of work in order to gain a practical perspective view of the programme approach and implementation of BPR and CI methodologies. Further methods will be employed to conduct empirical studies on outcomes of the case study analysis and literature surveys.

As a consequence of this being a case study approach, the researcher will not influence any BPR and CI methodology implementations employed by the organisation.

3.1 Research Location

The proposed case studies and empirical tests will be conducted at the organisations premises situated within Johannesburg; however it should be noted that this will not limit the researcher to pursue further studies outside the organisation if further data is required to strengthen and or validate the research.

3.2 Research Timescale

The case studies will form part of year 1, 2012, and will be limited to a minimum of 6 months and maximum of 9 months starting January 2012 and ending either June or September 2012. The empirical tests will be considered in year 3 and is proposed for year 2014 spanning across 4 months starting in February 2014.

Any changes in timelines will be agreed between the researcher and organisation as to deflect impact away from the organisations business operations.

4 Commitments

The success of the doctoral research depends on the major participant's commitment to the proposed study that will be undertaken at the organisations premises.

4.1 Organisation

The organisation commits to:

- Allowing the researcher access to resources associated to the agreed BPR programmes of work under study.
- Time and Financial assistance will be discussed and agreed to by both major participants

4.2 Researcher

The researcher commits to:

- Minimise and deflect any impacts to the business operations of the organisation.
- Treat all information as mutually agreed to in terms of ethical considerations covered in section 5.

5 Ethical Considerations

Due to the nature of the research being empirical case study based of which the participant observation method will be employed, anonymity and confidentiality will be offered to the organisation.

- Anonymity implies that no identifying names, logos and associated trademarks will be cited without prior agreement.
- Confidentiality implies that data can be retrieved exclusively via requested permission. All data will be stored securely either electronically or in a hard copy version within a secure location. As part of the data analysis process, hard copies (raw data) may be given to the doctoral supervision team and a small number of other research participants to review to ensure that the researcher's analysis has resonance. Hard copies will be returned to the researcher and will not remain in the possession of the research review participants.

6 Queries and Approval

All queries can be directed to the researcher Imtiaz Abdul Kader at 0829283071 or Imtiaz.abdulkader@standardbank.co.za.

Any organisation manager or representative who is empowered to give consent may do so here:

Name: Danie Olivier

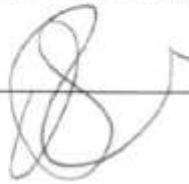
Position/Title: CEO PBBSA & Head CCO

Organisation Name: Standard Bank

Location: Johannesburg

Anonymity must be offered to the organisation if it does not wish to be identified in the research report. Confidentiality is more complex and cannot extend to the markers of student work, but can apply to the published outcomes. If confidentiality is required, please indicate which form of confidentiality applies?

[ ] No confidentiality required
[✓] Masking of organisation name in research report
[ ] No publication of the research report

Signature:  Date: 16/10/12

Organisation Informed Consent for Doctoral Case Study Research

Researcher - Imtiaz Abdul Kader – 442711

Organisation – Standard Bank

19 March 2012

6 Queries and Approval

All queries can be directed to the researcher Imtiaz Abdul Kader at 0829283071 or Imtiaz.abdulkader@standardbank.co.za.

Any organisation manager or representative who is empowered to give consent may do so here:

Name: Lin Wei

Position/Title: Director Performance Design Improvement + Assurance

Organisation Name: Standard Bank

Location: Johannesburg

Anonymity must be offered to the organisation if it does not wish to be identified in the research report. Confidentiality is more complex and cannot extend to the markers of student work, but can apply to the published outcomes. If confidentiality is required, please indicate which form of confidentiality applies?

[ ] No confidentiality required
[ ] Masking of organisation name in research report
[ ] No publication of the research report

Signature: _____ Date: 20/4/2017

Appendix F: Charles C Ragin's published fsQCA Manual

The addition of this manual in the appendix is with permission from the author Charles C Ragin, granted on the 11th of December 2013 in writing via email.

USER'S GUIDE TO

Fuzzy-Set / Qualitative Comparative Analysis

Charles C. Ragin
Department of Sociology
University of Arizona
Tucson, AZ 85721
cragin@email.arizona.edu

Assisted by:

Sarah Jane Strand
Claude Rubinson

September 2008

CONTENTS

1. Data Files
A) Opening a Data File 1
B) Opening Data Files of Various Formats 1
SPSS
SPSS
Excel - Notepad
Other
C) Saving File Options 3
D) Opening fsQCA Data in Other Formats 3
SPSS
Excel
2. Data Editor
A) Entering Data 5
Variables Names
Define Variable Type
Define Column Format
Define Variable Precision
Number of Cases
B) Editing Data 7
Add / Delete Variables 7
Compute Variables 8
1) Arithmetic Operators
2) Relational Operators
3) Arithmetic Functions
4) Other Operators
Compute Variables II 12
Recode Variables 13
1) Recode Variables Into Same Variables
2) Recode Variables Into Different Variables
Calibrating Fuzzy Sets 16
Add / Insert Cases 16
Delete Cases 16
Drop / Keep Cases If 16
Select Cases If 16
C) Working with Output 21

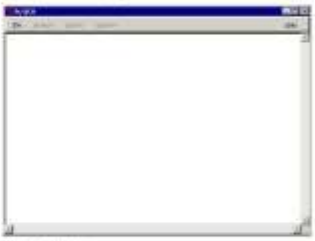
Printing Viewer Documents
Saving Results
3. Basic Statistics and Graphs
A) Frequencies 23
Obtaining Frequencies and Statistics
Sample Output
B) Descriptives 24
Obtaining Descriptive Statistics
Sample Output
C) Crosstabulations 25
Obtaining Crosstabulations
Sample Output
D) Graphs 27
Barchart
Histogram
X-Y Plot
4. Crisp-Set Analysis
A) Basic Concepts 33
1) Use of Binary Data
2) Boolean Negation
3) Use of Truth Tables to Represent Data
4) Grouping
5) Boolean Addition
6) Boolean Multiplication
7) Combinatorial Logic
Minimization 37
1) Use of Prime Implicants 39
2) Use of Old Marquis 's Law 42
3) Necessary and Sufficient Causes 42
B) Data 43
C) Analysis 44
Truth Table Algorithm 46
Limited Diversity and Counterfactual Analysis 50
Quine Algorithm (QCA 1.0) 53
Listing Truth Table Rows 53

Rules for Including Configurations 57
Setting Configurations to Minimize 57
The Eight Most Common Ways of Specifying a Crisp Analysis 58
Choosing Solutions: Terms Using the Prime Implicant Chart 60
Preparation for Solution Terms 60
D) Output (Crisp Sets) 67
Output from Quine Procedure 67
Output from Truth Table Procedure 68
5. Fuzzy-Set Analysis 71
A) Operations on Fuzzy Sets 71
Logical AND
Logical OR
Negation
B) Fuzzy Sets, Necessity, and Sufficiency (Fuzzy Subset Relations) 73
C) Using the Fuzzy Truth Table Algorithm 73
D) Output for "Specify Analysis" Option 81
E) Output for "Standard Analyses" Option 83
F) Consistency and Coverage 85

I. DATA FILES

A) Opening a Data File

> IVAQCA opens with the following window:



> From the main, choose
File
Open...
Data...

> In the Open File dialog box, select the file you want to open.

> Click Open.

B) Opening Data Files of Various Formats

Data files come in a wide variety of formats, and the software is designed to handle the following:

–IQCA (*.qda and *.qvr): these formats are produced when data was entered in IQCA 3.5 (DOS) software, whereby .QDA is the data file, and .QVR the file that contains the list of variable names. *Only single-set data can be input or saved in this format. It is a "legacy" format and users will be dropped.*

–Comma separated (*.csv): common delimited file, produced by Excel and other spreadsheet software

–Space separated (*.txt): space delimited file, can be created in WORD or other word processing software and saved as text only

–Tab separated (*.dat): tab delimited file, can be created using SPSS and other statistical software packages

The recommended formats are *.csv (Excel) and *.dat (SPSS).

Please note that IQCA makes the following assumptions about the structure of *.csv, *.dat and *.txt data files. First, and most important, IQCA assumes that the cells in the first row of the spreadsheet contain variable names for their respective columns. Second, IQCA assumes that the data begin in the second row of the spreadsheet and that each case is a single row. Finally, IQCA assumes that each column contains cells of the same type of data. Data types can vary across columns, but they cannot be consistent within columns. *Please remember to use very simple variables names, using only alphanumeric characters with no embedded punctuation or spaces. For example, "EDUH1996" is OK, but "EDUC (96)" and "EDUC-1996" are not.*

> Saving: Opening data originally created in **Excel**
Save the Excel file as CSV (comma delimited) format. Make sure that the first row of the Excel data spreadsheet contains the variable names. Open in IQCA.

> Saving: Opening data originally created in **SPSS**
Save the SPSS file in DAT (tab delimited) format. SPSS will ask you whether you want to "Write variable names to spreadsheet." *Do not uncheck this option.*

> Saving: Opening data originally created in **Word / Notepad**
Save the data delimited by spaces. Make sure that the first line contains the variable names, also separated by spaces. Save the file as a TXT (Text only) format, TXT (Text with Line breaks), TXT (MS-DOS), or TXT (MS-DOS with Line breaks). Open in IQCA.

> Saving: Opening data originally created in **other programs' formats**

By using STAT TRANSFER (Version 6 or later) you can transfer data from a variety of different formats into a CSV (comma separated) file. Open in IQCA.

Program	File Extension	Program	File Extension
1-2-3	WK*	SIR/D	DAT
Access	MDB	Paradox	DB
DBASE and compatibles	DBF	Quattro Pro	WQ1, WB*
dBase Mac	DBF	SAS for Windows and OS/2	SD2
EXCEL	XLS	SAS for Unix	SSD*
FoxPro	DBF	SAS Transport Files	XPT
Haver	DAT	S-PLUS	(none)
SAS	DAT	SPSS Data Files	SAV
S-PLUS3	SD2	SPSS Portable Files	POR
Statistica	STA	Stata	DTA
Systat	SYS, SYZ	Statistica	STA
Unicost	UNV	SYSTAT	SYS
ODBC Data Source	(none)		

→ Convert to: ASCII - Delimited; TEXT, CSV

C) Saving File Options

> From the main, choose
File
Save...

> The modified data file is saved, overwriting the previous version of the file of the same name and location.

Or: > To save a new data file or save data to a different format, from the main, choose
File
Save As...

> Select a file type from the drop-down list.

> Enter a filename for the new data file. We recommend using *.csv or *.dat.

D) Opening IQCA Data in Other Formats

Once you have your data in the IQCA program and have completed some preliminary analysis, you have the option to either edit the data in IQCA (see Chapter2), or edit your data with the help of software packages you are more familiar with (i.e. SPSS or Excel). Similarly, you can either display the data graphically with the IQCA program (see section D, or opt to SPSS or Excel for more elaborate graphical representations. If you choose SPSS or Excel for these operations, you need to save the IQCA file and transfer it to the program of your choice.

SPSS

> In order to open IQCA data in SPSS, save the IQCA data spreadsheet in tab separated format (*.dat). Make sure that the string variables in the IQCA data file are written without spaces in between them (no embedded spaces are allowed).

> In SPSS choose
File
Read Text Data.....

> Open the IQCA file you have just saved.

> SPSS will ask you several questions regarding your file. Check the following options:

Does your text file match a predefined format?	No
How are your variables arranged?	Delimited
Are variable names included at the top of your file?	Yes
The first case of data begins with line number?	2
How are your cases represented?	Each line represents a case
How many cases do you want to import?	All of the cases
Which delimiters appear between variables?	Tab
What is the text qualifier?	None
Would you like to save this file format for future use?	YES
Would you like to paste the syntax?	No
Then click FINISH	

> You can now edit the data and display it graphically in SPSS.

> In order to transfer the SPSS file back to IQCA, see Chapter 11 B) SPSS.

Excel

> In order to open IQCA data in Excel, save the IQCA data spreadsheet in comma separated format (*.csv). Make sure that the string variables in the IQCA data file are written without spaces in between them (no embedded spaces).

> In Excel choose
File
Open...

> Open the IQCA file you have just saved.

> You can now edit the data and display it graphically in Excel.

> In order to transfer the Excel file back to IQCA, see above.

1. DATA EDITOR

A) Entering Data (creating a data file from scratch, in SQCA)

- From the menu choose
  File
  Type...
- The *Add New Variables* window will open:

- Enter the **variable name**. The following rules apply to variable names:
  - The length of the name cannot exceed fifteen characters.
  - Each variable name must be unique. Duplication is not allowed.
  - Variable names are not case sensitive. The names VERSTAD, VerSTAD, and verstad are all considered identical.
  - Variable names cannot include spaces or hyphens.
  - Only alphanumeric characters may be used (0-9, a-Z).
- Choose between the three possible **variable types**. By default, all new variables are assigned to be *free numeric*. You can change the variable type by clicking on one of the three options. The available data types are:
  - Free numeric: data that is entered under this type can have any kind of precision (up to the limit of decimals indicated below).
  - Fixed numeric: data of this type will always be fixed to an indicated number of decimals.
  - String

- Determine **column width**. This option controls the width of columns in the Data Sheet.
- Choose the **level of precision**. With this option you can control the number of decimal places.
- Add the variable to the New Variable List by clicking the *Add* button.
- In addition to adding new variables, you can delete variables already added to the New Variable List by highlighting the variable and clicking on the *Remove* button. Likewise, if you need to make changes regarding the type, column width or precision of a variable you've already added to the New Variable List, you can do so by highlighting this variable and clicking on the *Edit* button.
- After entering all variables click *Ok*. A new window will open and ask you for the **number of cases** in your data set:

Note: In general, SQCA is able to process a large number of cases. However, an important feature of SQCA is that it deals with combinations of cases; therefore adding more variables will influence computational time much more than adding more cases. The number of possible combinations is 2 to the k power, where k is the number of causal conditions. As a rule of thumb, 10 or fewer causal conditions (i.e., 1024 possible combinations) is not a problem. When dealing with more than 10 conditions, it is basically just a matter of the amount of time you are willing to wait for the program to do the analyses.

- Enter the number of cases of your data set, press the *Ok* button, and the Data Sheet window will open:

- **Enter the data values**. You can enter data in any order. You can enter data by case or by variable, for selected areas or individual cells. The active cell is highlighted with a darker color. When you select a cell and enter a data value, the value is displayed in the cell editor under the menu bar. Values can be numeric or string. Data values are not recorded until after you press *Enter*.
- Before closing the Data Sheet you need to save it in order not to lose the entered information.

B) Editing Data

Add / Delete Variables

- In order to **add variables** to an already existing Data Sheet, choose
  Variables
  Add...
- Enter the variable name and its specifications and press the *Add* button.

- In order to **delete existing variables** in the Data Sheet, choose
  Variables
  Delete...
- Highlight the variables that you want to delete, transfer them into the Delete Column and click *Ok*.

Compute Variables

- In order to **compute new variables** out of existing ones or numeric or logical expressions, choose
  Variables
  Compute...
- The following window will open (with the names of the variables in your data file listed in the window):

- Type the name of a single target variable. It can be an existing variable or a new variable to be added to the working data file. *Do not use a single letter as a variable name (e.g., "X"). This will cause the compute function to crash.*
- To build an expression, either paste components into the Expression field or type directly in the Expression field.

1) Arithmetic Operators

+	**Addition**. The preceding term is added to the following term. Both terms must be numeric.
-	**Subtraction**. The following term is subtracted from the preceding term. Both terms must be numeric.
*	**Multiplication**. The preceding and the following term are multiplied. Both terms must be numeric.
/	**Division**. The preceding term is divided by the following term. Both terms must be numeric, and the second must not be 0.

2) Relational Operators

<	**Logical Less Than**. True (=1) for numeric terms if the preceding term is less than the following term. True for string terms if the preceding term appears earlier than the following term in the collating sequence (in alphabetical order). This operator is normally used only in a logical condition.
>	**Logical Greater Than**. True (=1) for numeric terms if the preceding term is greater than the following term. True for string terms if the preceding term appears later than the following term in the collating sequence (in alphabetical order). This operator is normally used only in a logical condition.
<=	**Logical Less Than Or Equal**. True (=1) for numeric terms if the preceding term is less or equal than the following term. True for string terms if the preceding term appears earlier than the following term in the collating sequence (in alphabetical order), or if the two are equal. This operator is normally used only in a logical condition.
>=	**Logical Greater Than Or Equal**. True (=1) for numeric terms if the preceding term is greater or equal than the following term. True for string terms if the preceding term appears later than the following term in the collating sequence (in alphabetical order), or if the two are equal. This operator is normally used only in a logical condition.
==	**Logical Equality**. True (=1) for terms that are exactly equal. If string terms are of unequal length, the shorter term is padded on the right with spaces before the comparison. This operator is normally used only in a logical condition.
!=	**Logical Inequality**. True (=1) for terms that are not exactly equal. If string terms are of unequal length, the shorter term is padded on the right with spaces before the comparison. This operator is normally used only in a logical condition.
&&	**Logical And**. True (=1) if both the preceding and the following term are logically true. The terms may be logical or numeric; numeric terms greater than 0 are treated as true. This operator is normally used only in a logical condition.
|	**Logical Or**. True if either the preceding or the following term are logically true. The terms may be logical or numeric; numeric terms greater than 0 are treated as true. This operator is normally used only in a logical condition. This operator may overlap the optional pipe for Expression Field.
~	**Logical Not**. True if the following term is false. (~ = boolean not). This operator is normally used only in a logical condition.

3) Arithmetic Functions

abs (y)	Returns the absolute value of y, which must be numeric.
acos (y)	Returns the arc cosine (inverse function of cosine) of radians, which must be a numeric value between 1 and 1, measured in radians.
asin (y)	Returns the arc sine (inverse function of sine) of radians, which must be a numeric value between 1 and 1, measured in radians.
atan (y)	Returns the arc tangent (inverse function of tangent) of radians, which must be a numeric value, measured in radians.
ceil (y)	Returns the integer that results from rounding y up (y must be numeric). Example: ceil (2.1) = 3.0
collbreak	Transforms an numeric or value scale variable into a fuzzy set, see below for details.
cos (y)	Returns the cosine of radians, which must be a numeric value, measured in radians.

cosh (y)	Returns the hyperbolic cosine [(e^ + e^)/2] of radians, which must be a numeric value, measured in radians. X cannot exceed the value of 230.
exp (y)	Returns e raised to the power y, where e is the base of the natural logarithms and y is numeric. Large values of y (y > 230) produce results that exceed the capacity of the machine.
floor (y)	Returns the integer that results from rounding y down (y must be numeric). Example: floor (2.1) = 2.0
fmod (y,y)	Returns the remainder when y is divided by modulus (y). Both arguments must be numeric, and modulus must not be 0.
fuzzyand (y, ...)	Returns the minimum of two or more fuzzy sets. Example: fuzzyand (1.0, 0.1) = 0.1
fuzzyor (y, ...)	Returns the maximum of two or more fuzzy sets. Example: fuzzyor (1.0, 0.1) = 1.0
fuzzynot (y)	Returns the negation (1 - y) of fuzzy sets (same as Logical Not '~'). Example: fuzzynot (0.8) = 0.2
int (y)	Returns the integer part of y. Numbers are rounded down to the nearest integer.
log (y)	Returns the base-e logarithm of y, which must be numeric and greater than 0.
log10 (y)	Returns the base-10 logarithm of y, which must be numeric and greater than 0.
pow (y,y)	Returns the preceding term raised to the power of the following term. If the preceding term is negative, the following term must be an integer. This operator can produce values too large or too small for the computer to process, particularly if the following term (the exponent) is very large or very small.
round (y)	Returns the integer that results from rounding y, which must be numeric. Numbers ending in .5 exactly are rounded away from 0. Example: round (2.5) = 3.0
sin (y)	Returns the sine of radians, which must be a numeric value, measured in radians.

sinh (y)	Returns the hyperbolic sine [(e^ - e^)/2] of radians, which must be a numeric value, measured in radians. X cannot exceed the value of 230.
square (y)	Returns the square of y, which must be numeric.
sqrt (y)	Returns the positive square root of y, which must be numeric and not negative.
tan (y)	Returns the tangent (sine/cosine) of radians, which must be a numeric value, measured in radians.
tanh (y)	Returns the hyperbolic tangent [(e^ - e^) / (e^ + e^)] of radians, which must be a numeric value, measured in radians.

4) Other Operators

( )	**Grouping**. Operators and functions within parentheses are evaluated before operators and functions outside the parentheses.
"	**Quotation Mark**. Used to indicate the values of string variables. Example: Compute if ... Variable == "IA"
????/??	**Syntax Missing**. Used when selecting subsets of cases. Example: Select if... Variable == ??/??/????
Clear	**Delete** the text in the Expression Field.

Compute Variables If ...

The If dialog box allows you to apply data transformations to select subsets of cases, using conditional expressions. A conditional expression returns a value of true, false, or missing for each case.

- To select cases restricted for the data transformation, choose:
  - Variables
  - Categories.

- Click on If and the following dialog box will appear.

- If the result of a conditional expression is true, the transformation is applied to the case.
- If the result of a conditional expression is false or missing, the transformation is not applied to the case.
- Most conditional expressions can use one or more of the six relational operators (<, >, <=, >=, =, and ~=) on the calculator pad.
- Conditional expressions can include variable names, constants, arithmetic operators, numeric and other functions, logical variables, and relational operators.

Recode Variables

You can modify data values by recoding them. This is particularly useful for collapsing or combining categories. You can recode the values within existing variables, or you can create new variables based on the recoded values of existing variables.

1) Recode Into Same Variables recodes the values of existing variables or collapses ranges of existing values into new values. You can recode numeric and string variables. You can recode single or multiple variables—they do not have to be all the same type. You can recode numeric and string variables together.

- In order to recode the values of a variable choose:

Variables
Recode...

- The following window will open:

- Select the [Same Variables] option.
- Select the variables you want to recode (numeric or string).
- Optionally, you can define a subset of cases to recode. The [If] dialog box for defining subsets of cases is the same as the one described for Compute Variable.
- Click [Values] to specify how to recode the values. The following dialog box will appear:

- You can define values to recode in this dialog box.

Old Value(s). The value(s) to be recoded. You can recode single values, ranges of values, and missing values. Ranges cannot be selected for string variables, since the concept does not apply to string variables. Ranges include their endpoints and any user-missing values that fall within the range.

New Value. The single value into which each old value or range of values is recoded. You can enter a value or assign the missing value.

- Add your specifications to the list on the right. Optionally, you can remove or change already entered specifications. Use the [Reset] button to clear the list of specifications.

2) Recode Into Different Variables recodes the values of existing variables or collapses ranges of existing values into new values for a new variable.

- You can recode numeric and string variables.
- You can recode numeric variables into string variables and vice versa.

- In order to recode the values of an old variable into a new variable, choose:
  Transform
  Recode
  Other Variables...

- The following window will appear:

- Select the (old) variable you want to recode either by selecting it from the drop-down menu or by typing it into the field.
- Enter an output (new) variable name.
- Click [Values] and specify how to recode values.
- Optionally, you can define a subset of cases to recode. The [If] dialog box for defining subsets of cases is the same as the one described for Compute Variable.

Calibrating Fuzzy Sets

In order to transform conventional variables into fuzzy variables, it is necessary to calibrate them, so that the variables match or conform to external standards. Most social scientists are content to use uncalibrated measures, which simply show the positions of cases relative to each other. Uncalibrated measures, however, are clearly inferior to calibrated measures. For example, with an uncalibrated measure of democracy it is possible to know that one country is more democratic than another or more democratic than average, but still not know if it is more a democracy or an autocracy.

Fuzzy sets are calibrated using theoretical and substantive criteria external to the data, and they also account the researcher's conceptualization, definition, and labeling of the

set in question. The end product is the fine-grained calibration of the degree of membership of cases in sets, with scores ranging from 0.0 to 1.0.

The researcher must specify the values of an interval-scale variable that correspond to three qualitative breakpoints that structure a fuzzy set: the threshold for full membership (fuzzy score = 0.95), the threshold for full nonmembership (fuzzy score = 0.05), and the cross-over point (fuzzy score = 0.5). These three benchmarks are used to transform the original ratio or interval-scale values into fuzzy membership scores, using transformations based on the log odds of full membership.

- From the menu choose:
  Variables
    Compute...

- The following window will open:

- Name the target variable (using 2-8 standard alphanumeric characters and no spaces, dashes, or punctuation) for the fuzzy set.

- Click calibrate(x,n1,c,n2) in the Functions menu. Click the arrow up next to the word "Functions".

- Edit the expression calibrate(,,,), for example, "calibrate(oldvar,25,10,2)". Here oldvar is the name of the existing interval or ratio scale variable already in the file, the first number is the value of oldvar that corresponds to the threshold for full

membership in the target set (0.95), the second number is value of oldvar that corresponds to the cross-over point (0.5) in the target set, and the third number is the value of oldvar that corresponds to the threshold for nonmembership in the target set (0.05).

- Click "OK".

- Check the data spreadsheet to make sure the fuzzy scores correspond to the original values in the manner intended. It may be useful to sort the variable in descending or ascending order, using the pull-down menus. The result is a fine-grained calibration of the degree of membership of cases in sets, with scores ranging from 0 to 1.

Add / Insert Cases

- In order to **add cases** into an already existing data sheet, choose:
  Cases
    Add...

- The following window will appear:

- Enter the number of cases you want to add to the existing number of cases. The additional case(s) will appear at the end (bottom) of the data set.

- In order to **insert cases** into an already existing data sheet, choose:
  Cases
    Insert...

- The Add window will appear.

- Enter the number of cases you want to insert above the case you highlighted in the data sheet. The additional case(s) will appear above the case (row) in which you have highlighted a cell.

Delete Cases

- In order to **delete single cases** from an already existing data sheet, choose:
  Cases
    Delete...

- The following window will appear:

- With this function you can only delete one case at a time.
- The program will ask you whether you want to delete the case in which you highlighted a cell in the data sheet. In the example above, a cell at case #4 was highlighted.

Drop / Keep Cases If

- In order to **drop or keep groups of cases** that have certain specifications, choose:
  Cases
    Drop / Keep If...

- The following window will appear:

- Specify the cases you want to keep or drop and click OK.

- If the result of a conditional expression is true, the case is dropped or kept. If the result of a conditional expression is false or missing, the case is not dropped or kept.

Select Cases If

Select Cases If provides several methods for selecting a subgroup of cases based on criteria that include variables and complex expressions, like:

- Variable values and ranges
- Arithmetic expressions
- Logical expressions
- Functions

Unselected cases remain in the data file but are excluded from analysis. Unselected cases are indicated with parentheses around the row number in the Data Sheet.

- In order to **select a subset of cases for analysis**, choose:
  Cases
    Select If...

- The following window will open:

- Specify the criteria for selecting cases.

- If the result of a conditional expression is true, the case is selected. If the result of a conditional expression is false or missing, the case is not selected.
- More conditional expressions can be typed using the six relational operators (<, >, <=, >=, =, ~=) on the calculator pad.
- Conditional expressions can include variable names, constants, arithmetic operators, numeric and other functions, logical variables, and relational operators.

Note: "Select If" works best when it is univariate. For example, if you want to use the "Select If" function combining two logical statements, e.g., both a logical AND and a logical NOT, try creating a new variable (with compute or recode) that reflects your selection criteria and then use the new variable with "Select If."

C) Working with Output

When you run a procedure, the results are displayed in the SQCA window. You can use the scroll bars to browse the results.

- In order to **print output**, choose
  File
    Print...

- Your computer specific printer options window will appear, in which you can specify your printing options.
- All output will be printed with the day, time, name, and page number on the top of each printed page.
- The output is written in monospace New Courier (10) in order allow simple transport between programs. Therefore, if you open the *.out file in EXCEL or some other program, the numbers in the tables will be slightly dislocated, unless you specify the appropriate font.
- Output may also be copied and pasted into Word, Wordpad, Text, or other files. In addition, it is possible to type directly in the output window in order to insert text or simple tables. You can also delete parts of the output by backspacing in the output windows, or highlighting parts and pressing the backspace or delete key on your keyboard.
- In order to **save output**, choose
  File
    Save As
      Output...
- SQCA will give you the option to save your output as either a SQCA specific Output File (*.out), or any other text format you may choose (e.g., txt).

3. BASIC STATISTICS AND GRAPHS

Most Statistics, histograms, and XY plots cannot be obtained for a variable if, for any case, the variable value is assigned as "don't care" (a dash) in the data spreadsheet. Bivariate, however, may still be created. (The use of "don't care" codings in the data spreadsheet is rare and is usually only associated with the edit- all's that table directly into the data spreadsheet.)

A) Frequencies

The Frequencies procedure provides frequency charts that are useful for describing many types of variables.

- In order to obtain frequencies, choose
  Analyze
    Statistics
      Frequencies...
- Select one or more variables from the *Variables* column and transfer them into the *Frequencies* column. Click OK.
- The output window will show your frequency table(s).

- The first line of your output will read the file name and the procedure you have chosen (Frequencies). The columns in the frequency table indicate the following:
  1. The values of the selected variable(s)
  2. The frequency (f) of this value in the data set
  3. The valid percent (Pct) (the percentage disregarding the missing cases)
- The last two rows indicate the total number of cases (Total) analyzed and the number of missing cases (Missing).

B) Descriptives

The Descriptives procedure displays univariate summary statistics for several variables in a single table.

- In order to obtain descriptive statistics, choose
  Analyze
    Statistics
      Descriptives...
- Select one or more variables from the *Variables* column and transfer them into the *Descriptives* column. Click OK.
- The output window will show your descriptive statistics.

- The first line of your output will read the file name and the procedure you have chosen (Descriptive Statistics). The columns in the descriptives table indicate the following:

1. The variable chosen (Variable)
2. The mean value (Mean)
3. The standard deviation (Std. Dev.)
4. The lowest value of the variable (Minimum)
5. The highest value of the variable (Maximum)
6. The number of cases (N Cases)
7. The number of missing cases (Missing)

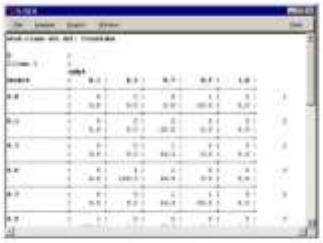
C) Crosstabulation

The Crosstabs procedure forms two-way tables. For multiway tables, statistics, and measures of association you will have to use standard statistical packages, like SPSS, for example.

- In order to obtain crosstabulations, choose:
  Analyze
  Tabulate
  Crosstabs...

- The following window will open:

- Select one variable from the Variables: column and transfer it into the Dependent column. This variable will appear in the rows of the table.
- Select one or more variables from the Variables: column and transfer them into the Independent column. These variables will appear in the columns of the table.
- You can specify how you want the table percentaged:
  - percentage across rows
  - percentage across columns
  - or percentage the total number of cases represented in the table
- Click OK.
- The output window will show your crosstabulation(s).



- The first line of your output will read the file name and the procedure you have chosen (Crosstabs). The first number in the cell indicates the number of cases in that cell (N). If repeated, additional numbers represent (a) the number of cases across the row (Row %), (b) the number of cases across the column (Column %), and/or (c) The percentage of total number of cases in the table (Total %). See the first cell of the column header for the key.
- The last column of the table reads the number of cases across the rows.
- The last row of the table reads the number of cases across the columns.
- The last two rows in the output indicate the total number of cases (Total) analyzed and the number of missing cases (Missing).

D) Graphs

Barchart

The Barchart procedure displays simple bar charts with summaries for groups of cases.

- In order to produce a **Barchart**, choose:
  Graphs
  Bar...

- The following window will open:

- Select a variable to define the categories on the X Axis shown in the chart. You can only choose **numeric data**. There is one bar for each value of the variable.
- The Barchart function only displays **values between 0 and 1**. If the values are not integers, the bars will overlap. Any instances where the variable is coded "does it care" will be represented as having a value of 2.
- Optionally, you can enter a **label** for the variables and/or a **title** for the graph, which will be displayed on the graph.
- Decide whether you want the Y Axis to represent the **frequency** of cases in a category or the **proportion of cases** in a category.
- Once you have entered the specifications, click the **Plot** button. The graph will be displayed in the white field to the right.
- In order to **print** this graph, you have to **save** it as a PostScript file (*.ps). Click the Save button and choose 'PostScript file' as the saving option. Open it in a graphics which reads PostScript files, such as Ghostview (GSview). (You can download the Ghostview files from the Internet at: http://www.cs.wisc.edu/~ghost/)

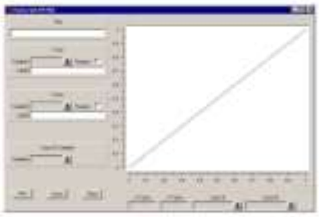
Histogram

- In order to produce a **Histogram**, choose
  Graphs
    Fuzzy
      Histogram…
- The following window will open:

- Select a variable to define the categories on the X Axis shown in the chart. You can only choose **numeric data**. There is one bar for each value of the variable.
- Optionally, you can enter a **label** for this variable and / or a **title** for the graph, which will be displayed on the graph.
- Decide whether you want the Y Axis to represent the **frequency of cases** in a category **or the proportion of cases** in a category.
- Once you have entered the specifications, click the **Plot** button. The graph will be displayed in the white field to the right.
- In order to **print** this graph, you have to **save** it as a PostScript file (*.ps). Click the Save button and choose "PostScript file" as the saving option. Open it in a program which reads PostScript files (e.g. Ghostview (GSview)) or some versions of MS Word. (You can download the Ghostview free from the Internet at http://www.cs.wisc.edu/~ghost/.)

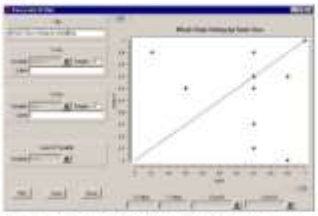
XY Plot

- In order to produce a **XY Plot**, choose
  Graphs
    Fuzzy
      XY Plot…
- The following window will open:



- Select a variable to define the values on the **X Axis** shown in the chart. You can only use numeric variables that ranges from 0 to 1 (i.e., fuzzy sets).
- Select a variable to define the values on the **Y Axis** shown in the chart. Again, you can only use numeric variables that range from 0 to 1.
- Optionally, you can enter a **title** for the graph, which will be displayed on the graph when it is saved.
- You can also add more information by choosing a **Case ID Variable**. This variable will not be represented in the graph, but you can determine its value by clicking on a particular point in the graph—the Case ID value will be displayed in the field in the lower right corner labeled Case ID. For example, the Case ID variable could be a string variable with the names of the countries in the data set. Once plotted, it is possible to click on any point in the plot. The Case ID field beneath the graph will show the country that is represented by this point. Clicking on the arrow next to the field will show other countries that share the same data values in the plot.

- The row beneath the graph will also indicate the x and y values of particular cases and the case numbers that correspond to each point.
- Once you have entered the specifications, click the **Plot** button and the plot will be displayed.



- The numbers in the boxes in two corners of the graph show set-theoretic consistency scores. The lower right box shows the degree to which the data plotted are consistent with Y ≤ X (Y is a subset of X). The upper left box shows the degree to which the data plotted are consistent with X ≤ Y (X is a subset of Y). If one of these two numbers indicates high consistency, the other can be interpreted as a coverage score. For example, if the number in the upper left corner is .91 and the number in the lower right corner is .60, these calculations indicate that the data are largely consistent with the argument that X is a subset of Y and its coverage of Y is 60%. That is, X accounts for 60% of the sum of the memberships in Y.
- You can negate variables in the graph by clicking on the negate option next to the variable name. This feature will subtract the fuzzy-set value of this variable from 1. Example: Pressure = .33; negation of Pressure = .67. (Same as '~' and 'fuzzynot(x)')
- In order to **print** this graph, you have to **save** it as a PostScript file (*.ps). Click the Save button and choose "PostScript file" as the saving option. Open it in a program which reads PostScript files, such as Ghostview (GSview). (You can download the Ghostview free from the Internet at http://www.cs.wisc.edu/~ghost/.)

4. CRISP-SET ANALYSIS

This part of the manual refers to the analysis of dichotomous social data reflecting the memberships of cases in conventional, crisp sets. In-depth discussions of this method can be found in *The Comparative Method* (Ragin 1987) and in chapter 5 of *Fuzzy-Set Social Science* (Ragin 2000). The data analytic strategy used here is known as *qualitative comparative analysis*, or QCA. QCA is based on Boolean algebra, where a case is either in or out of a set, and QCA uses binary-coded data, with 1 indicating membership and 0 indicating nonmembership. QCA using conventional, crisp sets is also known as csQCA.

A) Basic Concepts

An explicit algebraic basis for qualitative comparison exists in Boolean algebra. Also known as the algebra of logic and as the algebra of sets, Boolean algebra was developed in the mid-nineteenth century by George Boole. The Boolean principles used in qualitative comparative analysis are quite simple. Seven aspects of Boolean algebra are essential for the algorithms and are presented here in rough sequence here, with more difficult concepts following simpler concepts.

1) Use of binary data

There are two conditions or states in Boolean algebra: true (or present) and false (or absent). These two states are represented in base 2: 1 indicates presence; 0 indicates absence. The typical Boolean-based comparative analysis addresses the presence/absence conditions under which a certain outcome is obtained (that is, is true). Thus, in a Boolean analysis of social data all variables, independent and dependent, must be nominal-scale measures. Interval-scale measures are transformed into multi-category nominal-scale measures. Nominal-scale measures with more than two categories are represented with several binary variables.

2) Boolean negation

In Boolean logic, negation switches membership scores from 1 to 0 and from 0 to 1. The negation of the crisp set of males, for example, is the crisp set of not males. If a case has a Boolean score of 1 in the set of males, then it has a Boolean score of 0 in the set of not males.

3) Use of truth table to represent data

In order to use Boolean algebra as a technique of qualitative comparison, it is necessary to reconstruct a raw data matrix as a truth table. The idea behind a truth table is simple. Once the data have been recoded into nominal-scale variables and represented in binary form (as 1's and 0's), it is necessary only to sort the data into their different combinations of values on the independent variables. Each logical combination of values on the independent variables is represented as one row of the truth table. Once this part of the truth table is constructed, each row is assigned an output value (a score of 1 or 0 on the dependent variable) based on the scores of the cases which share that combination of

input values (that combination of scores on the independent variables). Thus, both the different combinations of input values (independent variables) and their associated output values (the dependent variable) are summarized in a truth table.

Truth tables have as many rows as there are logically possible combinations of values on the causal variables. If there are three binary independent variables, for example, the truth table will contain $2^3 = 8$ rows, one for each logically possible combination of three presence/absence independent variables. The truth table for a moderate-sized data set with three binary independent variables and one binary dependent variable (with 1 = present and 0 = absent) is shown in Table 1. Technically, there is no reason to include the frequency of each combination as part of the truth table. These values are included in the examples to remind the reader that each row is not a single case but a summary of all the cases with a certain combination of input values. In this respect, a row of a truth table is like a cell from a multiway cross-classification of several categorical independent variables.

Table 1: Hypothetical Truth Table Showing Three Causes of Regime Failure

Condition			Regime Failure	Number of Instances
conflict	*death*	*cia*	*failure*	
0	0	0	0	9
1	0	0	1	2
0	1	0	1	3
0	0	1	1	1
1	1	0	1	2
1	0	1	1	1
0	1	1	1	1
1	1	1	1	3

conflict = Conflict between older and younger military officers
death = Death of a powerful dictator
cia = CIA dissatisfaction with the regime

4) Groupings

Just as it is possible to calculate the logically possible number of combinations (2^k), it is also possible to calculate the number of logically possible groupings. The formula is 3^k-1, where k again is the number of attributes (3^3 -1 = 26). Table 2 shows the 26 logically possible groupings of the three dichotomies presented in Table 1. Using the formula just described, the 26 possible groupings are formed as follows: 8 involve combinations of three attributes, 12 involve combinations of two attributes, and six involve single attributes.

Table 2: Groupings Using Three Dichotomies (from Table 1)

Initial Configuration	Groupings involving	Groupings evolving a single

(8 combinations of three aspects)	combinations of two aspects (12)	aspect (6)
conflict • *death* • *cia*	*conflict* • *death*	*conflict*
conflict • *death* • ~*cia*	*conflict* • ~*death*	~*conflict*
conflict • ~*death* • *cia*	~*conflict* • ~*death*	*death*
conflict • ~*death* • ~*cia*	~*conflict* • *death*	~*death*
~*conflict* • *death* • *cia*	*conflict* • *cia*	*cia*
~*conflict* • ~*death* • *cia*	*conflict* • ~*cia*	~*cia*
conflict • *death* • ~*cia*	~*conflict* • *cia*	
~*conflict* • ~*death* • ~*cia*	~*conflict* • ~*cia*	
	death • *cia*	
	death • ~*cia*	
	~*death* • *cia*	
	~*death* • ~*cia*	

5) Boolean Addition

In Boolean algebra, if A + B = Z, and A = 1 and B = 1, then Z = 1. In other words, 1 + 1 = 1. The basic idea in Boolean addition is that if any of the additive terms is satisfied (present), then the outcome is true (occurs). Addition in Boolean algebra is equivalent to the logical operator OR. (In this discussion uppercase OR is used to indicate logical OR.) Thus, the above statement A + B = Z becomes: if A equals 1 OR B equals 1, then Z equals 1.

The best way to think of this principle is in logical terms, not arithmetically. For example, there might be several things a person could do to lose his or her job. It does not matter how many of these things the person does. If the employee does any one (or all) of them, he or she will be fired. Doing two of them will not cause one employee to be more fired than another employee who does only one of them. Fired is fired, a truly qualitative state. This example succinctly illustrates the nature of Boolean addition: satisfy any one of the additive conditions and the expected outcome follows. This aspect of Boolean addition is very useful in social scientific analysis, especially qualitative comparison, although its value is not generally recognized.

Consider the collapse of military regimes. Assume that there are three general conditions that cause military regimes to fall: sharp conflict between older and younger military officers (*conflict*), death of a powerful dictator (*death*), or CIA dissatisfaction with the regime (*cia*). Any one of these three conditions may be sufficient to prompt a collapse. The truth table for a number of such regimes in different countries is shown in Table 1 (with 1 = present and 0 = absent). Each combination of causes produces either regime failure or an absence of regime failure—there are no contradictory rows.

The "simplified" Boolean equation

failure = conflict + death + cia

expresses the relation between the three conditions and regime failure simply and elegantly for both negative and positive instances. Simply stated: if any one (or any two or all three) of these conditions obtains, then the regime will fall.

6) Boolean Multiplication

Boolean multiplication differs substantially from normal multiplication. Boolean multiplication is relevant because the typical social science application of Boolean algebra concerns the process of simplifying expressions known as "sums of products." A product is a particular combination of causal conditions. The data on collapsed military regimes from Table 1 can be represented in "primitive" (that is, unreduced) sums-of-products form as follows:

failure = *conflict* • ~*death* • ~*cia* +
~*conflict* • *death* • ~*cia* +
~*conflict* • ~*death* • *cia* +
conflict • *death* • ~*cia* +
conflict • ~*death* • *cia* +
~*conflict* • *death* • *cia* +
conflict • *death* • *cia*

Each of the seven terms represents a combination of causal conditions found in at least one instance of regime failure. The different terms are products because they represent intersections of conditions (conjunctures of causes and absences of causes). The equation shows the different primitive combinations of conditions that are linked to the collapse of military regimes.

Boolean multiplication, like Boolean addition, is not arithmetic. The expression *conflict* • ~*death* • ~*cia* does not mean that the value of *conflict* (1) is multiplied by the value of *death* (0) and by the value of *cia* (0) to produce a result value of 0. It means simply that a presence of *conflict* is combined with an absence of *death* and an absence of *cia*. The total situation, *failure = conflict* • ~*death* • ~*cia*, occurs in the data twice. This conjunctural character of Boolean multiplication shapes the interpretation of the primitive sums-of-products equation presented above: *failure* (regime failure) occurs if any of seven combinations of three causes is obtained. In Boolean algebra addition indicates logical OR and multiplication indicates logical AND. The three causes are ANDed together in different ways to indicate different empirical configurations. These intersections are ORed together to form an unreduced, sums-of-products equation describing the different combinations of the three causes linked to regime failure.

7) Combinatorial Logic

Boolean analysis is combinatorial by design. In the analysis of regime failures presented above, it appears from casual inspection of only the first four rows of the truth table (Table 1) that if any one of the three causes is present, then the regime will collapse.

While it is tempting to take this shortcut, the route taken by Boolean analysis is much more exacting of the data. This is because the absence of a cause has the same logical status as the presence of a cause in Boolean analysis. As noted above, Boolean simplification indicates that presence and absence conditions are combined, that they interact.

Consider the second row of the truth table (Table 1), which describes the five instances of military regime failure linked to causal configuration *conflict* • ~*dearth* • ~*cia*. Simple inspection suggests that in this case *failure* (regime failure) resulted from the first cause, *conflict*. But notice that of the seventeen total observations we study this row of the truth table, and two on any of the other sextuplets of regime failure, he or she might conclude that *conflict* causes failure only if causes *dearth* and *cia* are absent. This is what the *conflict* • ~*dearth* • ~*cia* combination indicates. This row by itself does not indicate whether *conflict* would cause failure in the presence of *dearth* or *cia* or both. All the researcher knows from these two instances of *conflict* • ~*dearth* • ~*cia* is that the *conflict* is cause (failure, it may be necessary for the other conditions (*dearth* and *cia*) to be absent. From a Boolean perspective, it is entirely possible that in the presence of one or both of these other conditions, any configuration *conflict* • ~*dearth* • ~*cia*), failure may not result. To return to the original designations, it may be that in the presence of CIA meddling (*cia*), conflict between junior and senior officers (*conflict*) will dissipate as the two factions unite to oppose the strategy by outsiders to dictate events.

To push this argument further, assume the investigator had knowledge of only the first three rows of the truth table. The data would support the idea that the presence of any one of the three conditions causes failure, two rows the data might indicate that *conflict* causes failure only when *dearth* and *cia* are absent (*conflict* • ~*dearth* • ~*cia*), *dearth* causes failure only when *conflict* and *cia* are absent (~*conflict* • *dearth* • ~*cia*), and so on. A strict application of combinatorial logic requires that these conclusions be pieced as conclusions drawn from a limited variety of cases.

This feature of combinatorial logic is consistent with the idea that cases, especially their causally relevant features, should be viewed holistically. The holistic character of the Boolean approach is consistent with the orientation of qualitative scholars to comparative cases in order to see whether different causes in context. When the second row of the truth table (Table 1) is examined, it is not interpreted as instances of failure caused by *conflict*, but as instances of failure caused by *conflict* • ~*dearth* • ~*cia*. Thus, in Boolean based qualitative comparison, causes are not viewed in isolation, but always within the context of the presence and absence of other causally relevant conditions.

Minimization

The restrictive character of combinatorial logic seems to indicate that the Boolean approach simply compounds complexity on top of complexity. This is not the case. There are simple and straightforward rules for simplifying complexity—for reducing primitive expressions and formulating more succinct Boolean statements. The most fundamental of these rules is

If two Boolean expressions differ in only one causal condition, yet produce the same outcome, then the causal condition that distinguishes the two expressions can be considered irrelevant and can be removed to create a simpler, combined expression.

Essentially this minimization rule allows the investigator to take two Boolean expressions that differ in only one term and produce a combined expression. For example, *conflict* • ~*dearth* • ~*cia* and *conflict* • *dearth* • ~*cia*, which both produce outcome *failure*, differ only in *dearth*; all other elements are identical. The minimization rule stated above allows the replacement of these two terms with a single, simpler expression: *conflict* • ~*cia*. In other words, the consequence of these two terms, *conflict* • ~*dearth* • ~*cia* and *conflict* • *dearth* • ~*cia*, is whether indicates that in instances of *conflict* • ~*cia*, the value of *dearth* is irrelevant. Cause *dearth* may be either present or absent, *failure* will still occur.

The logic of this simple data reduction parallels the logic of experimental design. Only one causal condition, *dearth*, varies and no difference in outcome is detected. Because both *conflict* • ~*dearth* • ~*cia* and *conflict* • *dearth* • ~*cia* are instances of *failure*. According to the logic of experimental design, *dearth* is irrelevant to *failure* in the presence of *conflict* • ~*cia* (that is, holding these two conditions constant). Thus, the process of Boolean minimization mirrors the logic of experimental design. It is a straightforward operationalization of the logic of the most crucial scientific comparison.

This process of logical minimization is conducted in a bottom-up fashion until no further pairwise reduction of Boolean expressions is possible. Consider again the data on military regime failures presented above. Each of the rows with nine cases present and two absent can be combined with rows with two causes present and nine absent because all these rows have the same outcome (*failure*) and each pair differs in only one causal condition:

conflict • ~*dearth* • ~*cia* combines with *conflict* • *dearth* • ~*cia* to produce *conflict* • ~*cia*;
conflict • ~*dearth* • ~*cia* combines with *conflict* • ~*dearth* • *cia* to produce *conflict* • ~*dearth*;
~*conflict* • *dearth* • ~*cia* combines with ~*conflict* • *dearth* • ~*cia* to produce *dearth* • ~*cia*;
~*conflict* • *dearth* • ~*cia* combines with ~*conflict* • ~*dearth* • *cia* to produce ~*conflict* • *dearth*;
~*conflict* • ~*dearth* • *cia* combines with ~*conflict* • *dearth* • *cia* to produce ~*dearth* • *cia*;
~*conflict* • ~*dearth* • *cia* combines with ~*conflict* • *dearth* • *cia* to produce ~*conflict* • *cia*

Similarly, each of the rows with two causes present and one absent can be combined with the one with all three present

conflict • *dearth* • ~*cia* combines with *conflict* • *dearth* • *cia* to produce *conflict* • *dearth*;
conflict • ~*dearth* • *cia* combines with *conflict* • *dearth* • *cia* to produce *conflict* • *cia*;
~*conflict* • *dearth* • *cia* combines with *conflict* • *dearth* • *cia* to produce *dearth* • *cia*

Further reduction is possible. Note that the reduced terms produced in the first round can be combined with the reduced terms produced in the second round to produce even simpler expressions:

conflict • ~*dearth* combines with *conflict* • *dearth* to produce *conflict*
conflict • ~*cia* combines with *conflict* • *cia* to produce *conflict*
~*conflict* • *dearth* combines with *conflict* • *dearth* to produce *dearth*
dearth • ~*cia* combines with *dearth* • *cia* to produce *dearth*
~*conflict* • *cia* combines with *conflict* • *cia* to produce *cia*
~*dearth* • *cia* combines with *dearth* • *cia* to produce *cia*

Although tedious, this simple process of minimization produces the final, reduced Boolean equation

failure = *conflict* + *dearth* + *cia*

True enough, this was obvious from simple inspection of the entire truth table, but the problem presented was chosen for its simplicity. The example directly illustrates key features of Boolean minimization. It is bottom-up (that is, inductively oriented). It seeks to identify even smaller sets of conditions (that is, simpler combinations of causal conditions) for which an outcome is true. And it is experiment-like in its focus on pairs of configurations differing in only one cause.

3) Use of "prime implicants"

A further Boolean concept that needs to be introduced is the concept of implication. A Boolean expression *a* and to imply another (if the membership of the second term *a* is a subset of the membership of the first. For example, *a* implies *a* + ~*b* + ~*c* because a subtracts all the members of *a* + ~*b* + ~*c* (that is, *a* + ~*b* + ~*c*) is a subset of *a*). This concept is best understood by example. If *a* indicates economically dependent countries, *b* indicates the presence of heavy industry, and *c* indicates centrally coordinated economies, *a* subtracts all dependent countries within *a* + ~*b* + ~*c* subtracts all dependent countries that lack both centrally coordinated economies and heavy industry. Clearly the membership of *a* + ~*b* + ~*c* is included in the membership of *a*. Thus, *a* implies *a* + ~*b* + ~*c*.

The concept of implication, while obvious, provides an important tool for minimizing primitive terms of product expressions. Consider the hypothetical truth table shown in Table 3, which summarizes data on three causal conditions thought to affect the success of strikes (briefly: *a* (*union*), *b* (*strong*), *c* (*wealthy*) striking worker for the product produced by the strikers (*worker*), the threat of complete strikes by workers in associated industries (*threat*), and the existence of a large strike fund (*fund*).

The Boolean equation for *success* (successful strikes) showing unreduced (primitive) Boolean expressions is

$$\text{success} = \begin{array}{l} \text{worker} \bullet \sim\text{threat} \bullet \text{fund} + \sim\text{worker} \bullet \text{threat} \bullet \text{fund} + \\ \text{worker} \bullet \text{threat} \bullet \text{fund} + \text{worker} \bullet \text{threat} \bullet \text{fund} \end{array}$$

Table 3: Hypothetical Truth Table Showing Three Causes of Successful Strikes

Worker	Condition: Threat	Fund	Success (strike)	Frequency
0	0	0	0	4
1	0	0	0	1
0	1	0	0	1
1	1	0	0	1
0	0	1	0	4
1	0	1	1	5
0	1	1	0	3
1	1	1	1	4

The first step in the Boolean analysis of these data is to attempt to combine as many compatible rows of the truth table as possible. (Note that this part of the minimization process uses rows with an output value of 1—strikes succeeded.) This first phase of the minimization of the truth table produces the following partially minimized Boolean equation, which in effect turns a primitive Boolean equation with four three-variable terms into an equation with three two-variable terms:

worker • ~*threat* • *fund* combines with *worker* • ~*threat* • *fund* to produce *worker* • *fund*
worker • *threat* • *fund* combines with *worker* • *threat* • *fund* to produce *worker* • *threat*
worker • *threat* • *fund* combines with ~*worker* • *threat* • *fund* to produce *threat* • *fund*

success = *worker* • *fund* + *worker* • *threat* + *threat* • *fund*

Product terms such as these in the preceding equation which are produced using this simple minimization rule—combine rows that differ on only one cause if they have the same output value—are called prime implicants. Crudely, each prime implicant covers (that is, implies) several primitive expressions in the truth table. In the partially minimized equation given above, for example, prime implicant *worker* • *fund* covers two primitive Boolean expressions listed in the truth table: *worker* • *threat* • *fund* and *worker* • ~*threat* • *fund*.

This partially reduced Boolean expression illustrates a common finding in Boolean analysis: often there are more reduced expressions (prime implicants) than are needed to cover all the original, primitive expressions. Prime implicant *worker* • *threat* implies primitive term *worker* • *threat* • *fund* and *worker* • *threat* • ~*fund*, for example, yet these two primitive terms are also covered by *worker* • *fund* and *threat* • ~*fund*, respectively. Thus, *worker* • *threat* may be redundant from a purely logical point of view; it may not

be an essential prime implicant. In order to determine which prime implicants are logically essential, a minimization device known as a prime implicant chart is used. [illegible]

[illegible]

$$success = market \cdot fund + threat \cdot \neg fund$$

[illegible]

Table 4: Prime Implicant Chart Showing Coverage of Original Terms by Prime Implicants (Hypothetical Strike Data)

		Primitive Expressions			
		market • threat • fund	market • ¬threat • fund	market • threat • ¬fund	¬market • threat • ¬fund
Prime Implicants	market • fund	X	X		
	market • threat	X		X	
	threat • ¬fund			X	X

[illegible]

2) Use of De Morgan's Law

The application of De Morgan's Law is straightforward. [illegible]

$$success = market \cdot fund + threat \cdot \neg fund$$

becomes:

$$\neg success = (\neg market + \neg fund) \cdot (\neg threat + fund)$$
$$= \neg market \cdot \neg threat + \neg market \cdot fund + \neg threat \cdot \neg fund$$

[illegible]

[illegible]

3) Necessary and Sufficient Causes

[illegible]

[illegible]

[illegible]

B) Data

The following window shows a sample crisp-set data sheet:

[illegible]

(The example in this section is from Rihoux and Ragin (2008), Configurational Comparative Analysis.)

C) Analysis

[illegible]

Truth Table Algorithm

[illegible]

[illegible]

» In order to create the truth table spreadsheet, choose:
Analyze
Fuzzy Sets
Truth Table Algorithm……

The following window will open, listing the variables in your file:

• Identify the case aspect you want to explain and transfer it into the Outcome field.

• Select a preliminary list of causal conditions by moving them over to the Causal Conditions field.

• Click on the Run button and the following window containing the full truth table will appear:

• The truth table will have 2^n rows (where n represents the number of causal conditions), reflecting all possible combinations of causal conditions. The 1s and 0's represent full membership and non-membership for each condition, respectively. For each row, a value for each of the following variables is created:

number	the number of cases displaying the combination of conditions
consist	the proportion of cases in each truth table row that display the outcome
pre	an alternative measure of consistency (developed for fuzzy sets) based on a graded proportional reduction in error calculation. In crisp set analysis this will be equal to *consist*.
product	the product of *consist* and *pre*. For crisp sets this is simply degree of consistency squared.

Note that the outcome labeled as the outcome you voted in this example is blank. It is up to the investigator to determine the outcome for each configuration using the following procedure.

• The researcher must begin by developing a rule for classifying some combinations (rows) as relevant and others as irrelevant, based on their frequency. This is accomplished by selecting a frequency threshold based on the number of cases in each row, shown in *number* column. When the total number of cases in an analysis is relatively small, the frequency threshold should be 1 or 2. When the total N is large, however, a more substantial threshold should be used. It is very important to examine the distribution of cases across causal combinations.

• Configurations (rows) can be sorted by their frequency by clicking any cell in the *number* column and choosing:

Sort
Descending

• After sorting rows and selecting a frequency threshold, delete all rows that do not meet the threshold. If the cases have been sorted in a descending order according to *number*, click on the first case that falls below the threshold then select:

Edit
Delete current row to last row

If cases have not been sorted then those cases that do not meet the threshold can be deleted individually by selecting the row the choosing

Edit
Delete current row

• The next step is to distinguish configurations that are subsets of the outcome from those that are not. For crisp sets, this determination is made using the measure of set-theoretic consistency reported in the *consist* column. Values below 1.0 indicate substantial inconsistency. It is useful to sort the consistency scores in descending order to evaluate their distribution (this should be done after removing rows that fail to meet

sky frequency threshold). Sorting is accomplished by clicking any cell in the *consist* column and choosing:

Sort
Descending

Identify any gaps in the upper range of consistency that might be useful for establishing a consistency threshold. Keep in mind that it is always possible to examine several different thresholds and assess the consequences of lowering and raising the consistency cut-off.

• If it is now necessary to indicate which configurations can be considered subsets of the outcome and which cannot. Input a 1 in the outcome column (*outcome*) in this example) for each configuration whose consistency level meets and or exceeds the threshold. Input a 0 in the outcome column for each configuration whose consistency score does not meet the consistency threshold.

• Alternatively, one can use the "Delete and code" function to automate this process. Select:

Edit
Delete and code

In the first field, the frequency threshold is selected. The default number of cases is 1, but may be changed by typing the selected frequency threshold into the field. In the second field, the consistency threshold is selected. The default consistency is 0.8, but this may be changed by typing the selected consistency threshold into the field.

Click "OK". The program will delete rows where the frequency threshold is not met, and will code the outcome as 0 or 1 depending on the selected consistency threshold.

• The following window displays the truth table that would appear after

1. applying a frequency threshold of 1 to the data and eliminating configurations that do not have any observations (36 configurations)
2. selecting a consistency threshold of 0.9 and placing a 1 in the *survival* column for configurations with 0.90 consistency or greater (9 configurations) and a 0 the cases with lower consistency (17 configurations).

From here, there are two possibilities for the analysis: specifying a single analysis versus deriving the three "standard" analyses (complex, parsimonious and intermediate). Clicking the "Standard Analyses" button (which gives the three solutions) is the recommended procedure.

6 Specify Analysis Option

• Once the truth table is constructed select Specify Analysis to bring up the Truth Table Analysis Window:

• In the Specify panel setting Positive cases to "True" and all the others to "False" yields the "most complex" solution. This window appears as:

• To derive the most parsimonious solution, set Positive cases to "True," Negative Cases, Don't Care, and Contradictions to "False," and Remainders to "Don't Care." The window will appear:

• All other options (the prime implicants and output frequencies) can be set following the procedures outlined below for the Quine algorithm.

• Clicking Preview will present a simple truth table summary in the output window. Generally, this is not a useful button to click for the truth table algorithm because the user has just created and coded the truth table and thus does not need to "preview" it. In any event, the "preview" procedure is a dead end (the truth table analysis is not performed) and should not be clicked when using the truth table algorithm.

• Clicking List will give you a list of the configurations of causic conditions found in the data and the consistency of each configuration. Again, this is not a useful procedure for the truth table algorithm, because the user has just constructed and viewed the truth table. Like "Preview" it is a dead end (the truth table analysis is not performed) and should not be clicked when using the truth table algorithm.

• To perform the analysis click the Run button and the output will appear in the output window.

b) Standard Analyses Option

• Once the truth table is fully constructed, select Standard Analyses. Standard Analyses automatically provides the user with the complex, parsimonious, and intermediate solutions. "Standard Analyses" is the recommended procedure, as this is the only way to derive the intermediate solution. To derive the intermediate solution, the software

conducts counterfactual analyses based on information about causic conditions supplied by the user.

Limited Diversity and Counterfactual Analysis

One of the most challenging aspects of comparative research is the simple fact that researchers must work with relatively small *Ns*. Investigators often confront "many-variables/few-cases", a situation that is greatly complicated the fact that comparativists typically focus on combinations of case aspects—case aspects that are causically complex combinations of more basic causic conditions. Ideally, researchers should assess as causic only those logically possible combinations of causic conditions that are consistent with theoretical, substantive, and/or historical knowledge. Empirically occurring social phenomena, however, are profoundly limited in their diversity. The empirical world known never presents social scientists all the logically possible combinations of causic conditions that are to their arguments (as shown with hypothetical data in Table 1, below). While limited diversity is central to the construction of social and political phenomena, it also severely complicates their analysis.

Table 1: Truth table with four causal conditions (A, B, C, and D) and one outcome (Y)

A	B	C	D	Y
0[0]	0[0]	0[0]	0[0]	0[0]
0[0]	0[0]	0[0]	1[0]	1
0[0]	0[0]	1[0]	0[0]	1
0[0]	0[0]	1[0]	1[0]	1
0[0]	1[0]	0[0]	0[0]	0[0]
0[0]	1[0]	0[0]	1[0]	0[0]
0[0]	1[0]	1[0]	0[0]	1
0[0]	1[0]	1[0]	1[0]	0[0]
1[0]	0[0]	0[0]	0[0]	1
1[0]	0[0]	0[0]	1[0]	1
1[0]	0[0]	1[0]	0[0]	1
1[0]	0[0]	1[0]	1[0]	1
1[0]	1[0]	0[0]	0[0]	1[0]
1[0]	1[0]	0[0]	1[0]	1[0]
1[0]	1[0]	1[0]	0[0]	1
1[0]	1[0]	1[0]	1[0]	1

Rows with "?" in the Y column lack cases—the outcome cannot be determined.

As a solution for slower combinations of causic conditions, comparative researchers often engage in "thought experiments" (Weber [1903] 1949). That is, they imagine counterfactual cases and hypothesize their outcomes, using their theoretical and substantive knowledge to guide their assessments. Because QCA uses truth tables to assess cross-case patterns, this process of considering counterfactual cases [i.e., absent combinations of causic conditions] is explicit and systematic. In fact, this feature of QCA is one of its easy strengths. However, the explicit consideration of counterfactual cases and the

evaluation of the results of such assessments into statements about cross-case patterns are relatively rare in social science. The specification of best practices with respect to QCA and counterfactual analysis, therefore, is essential.

Imagine a researcher who postulates, based on existing theory, that causic conditions A, B, C, and D are all linked in some way to outcome Y. That is, it is the presence of these conditions, not their absence, that should be linked to the presence of the outcome. The empirical evidence indicates that many instances of Y are coupled with the presence of causic conditions A, B, and C, along with the absence of condition D (i.e., $ABC\bar{D} \rightarrow Y$). The researcher suspects, however, that all that really matters is having the first three causes, A, B and C. In order for A B C to generate Y, it is not necessary for D to be absent. However, there are no observed instances of A, B, and C combined with the presence of D (i.e., no observed instances of $ABCD$). Thus, the decisive case for determining whether the absence of D is an essential part of the causal mix (with A B C) simply does not exist.

Through counterfactual analysis (i.e., a thought experiment), the researcher could declare this hypothetical combination ($ABCD$) to be a likely instance of the outcome (Y). That is, the researcher might assert that $ABCD$, if it existed, would lead to Y. This counterfactual analysis would allow the following logical simplification:

$$ABC\bar{D} + ABCD \rightarrow Y$$
$$ABC(\bar{D}+D) \rightarrow Y$$
$$ABC \rightarrow Y$$

How plausible is this simplification? The answer to this question depends on the state of the relevant theoretical and substantive knowledge concerning the connection between D and Y in the presence of the other three causic conditions (A B C). If the researcher can, statistical, on the basis of existing knowledge, that there is every reason to expect that the presence of D should contribute to outcome Y under these conditions (or conversely, that the absence of D should not be a contributing factor), then the counterfactual analysis just presented is plausible. In other words, existing knowledge makes the assertion that $ABC\bar{D} \rightarrow Y$ an "easy" counterfactual, because it involves the addition of a redundant cause (D) to a configuration which is believed to be linked to the outcome (A B C).

One strength of QCA is that it not only provides tools for deriving the two endpoints of the complex/parsimony continuum, it also provides tools for specifying intermediate solutions. Consider again the truth table presented in Table 1, which uses A, B, C, and D as causic conditions and Y as the outcome (page 50). Analysts, as before, bring theoretical and substantive knowledge assumes that it is the presence of these causic conditions, not their absence, that is linked to the outcome. The results of the analysis (using counterfactuals) (i.e., the complex solution) reveals that combination A B c appears Y. The analysis of this same evidence permitting any counterfactual that will yield a more parsimonious result (i.e., the parsimonious solution) is that A by itself is causic for the presence of Y. Consider of these two results as the two endpoints of the complex/parsimony continuum, as follows:

$$ABc: \qquad\qquad A$$

Observe that the solution privileging complexity (ABc) is a subset of the solution privileging parsimony (A). This follows logically from the fact that both solutions must cover the rows of the truth table with "1" present, the parsimonious solution also incorporates some of the remainders in counterfactual cases and thus embraces additional rows. Along the complexity-parsimony continuum are other possible solutions to this same truth table, for example, the combination AB. These intermediate solutions are produced when different subsets of the remainders used to produce the parsimonious solution are incorporated into the results. These intermediate solutions constitute subsets of the most parsimonious solution (A in this example) and supersets of the solution offering maximum complexity (ABc). The subset relations between solutions is maintained along the complexity-parsimony continuum. The implication is that any causic combination that lies at least some of the causic conditions specified in the complex solution (ABc) is a valid solution of the truth table in sing as it contains all the causic conditions specified in the parsimonious solution (A). It follows that there are two valid intermediate solutions to the truth table:

$$\begin{array}{ll} & AB \\ ABc: & Ac: \qquad A \end{array}$$

Both intermediate solutions (AB and Ac) are subsets of the solution privileging parsimony and supersets of the solution privileging complexity. The first (AB) permits counterfactuals $ABC\bar{D}$ and $ABCd$ (no combinations linked to outcome Y. The second permits counterfactuals $A\bar{b}cD$ and $A\bar{b}cd$.

The relative viability of these two intermediate solutions depends on the plausibility of the counterfactuals that have been incorporated into them. The counterfactuals incorporated into the first intermediate solution are "easy" because they are used to eliminate (from the combination ABc), and in this example, existing knowledge supports the view that D is the presence of C, not its absence, that is linked to outcome Y. The counterfactuals incorporated into the second intermediate solution, however, are "difficult" because they are used to eliminate B from Ac. According to existing knowledge the presence of B should be linked to the presence of outcome Y. The principle that only easy counterfactuals should be incorporated supports the selection of A as the optimal intermediate solution. This solution is the same as the one that a conventional case-oriented researcher would derive from this evidence, based on a straightforward concern to combinations of causic conditions that are (1) shared by the positive cases (or at least a subset of the positive cases), (2) believed to be linked to the outcome, and (3) not displayed by negative cases.

• After Standard Analyses is selected, a window for guiding the derivation of the intermediate solution will appear. Here, the researcher must select how each causic condition should theoretically contribute to the outcome, as described above. If the condition should contribute to the outcome when present, select "Present." If the condition should contribute to the outcome when absent, select "Absent." If the

condition could contribute to the outcome when it is present OR absent, select "Present or Absent."

• Please note: When the algorithm for selecting prime implicants cannot fully reduce the truth table, the Prime Implicant Window will appear and the user must select the prime implicants to be used, based on theoretical and substantive knowledge. This window is most likely to pop open when the program is deriving the parsimonious solution, but could happen for all three solutions. (See below for a description of how this window operates.

• To perform the analysis, click OK and the intermediate solution will appear in the output window. The output window is positioned on the parsimonious solution. The complex solution is directly above the parsimonious, and the intermediate solution is directly below the parsimonious.

The Quine Algorithm (QCA 3.0)

The Quine algorithm for crisp-set analysis is run in exactly the same way as the truth table algorithm because it does not present the user with a redundant truth table spreadsheet as an intermediate step. It is contained in the software, however, for users who like more familiar with it. (The Quine procedure was implemented first.)

• In order to analyze your crisp data set using the original Quine algorithm, choose

Analyze
Crisp-Sets
Quine...

• The following window will open (note that the highlighted box is the Parsimonious box):

• Identify the outcome you want to explain and transfer it into the Dependent field.
• Highlight among the remaining conditions the ones that you think explain the outcome and transfer them into the Causal Conditions field.

Listing Truth Table Rows

• In order to view a listing of the truth table you just specified, choose

Analyze
Crisp-Sets
Quine.....

• Specify your outcome and causal conditions and click the List button.

• The following output will be shown in the same window:

[Compare to Table 9.2, *The Comparative Method*, page 134]

• Cases with missing values for one or more variables are not included in the configurations in the truth table.

• The configurations are sorted according to number of instances (cases).

- Each row displays one configuration of causal conditions. Absence of a condition is indicated by lower-case letters, the presence of a condition by upper-case letters.

- What follows is the accumulated outcome of all cases with this specific configuration of causes. In the example above, 3 cases have clear-cut outcomes (4,5,6,13). In row #6, for instance, all five cases have the outcome 1. The four cases of row #8, on the other hand, all have the outcome 0. In the event that not all cases of a certain configuration indicate the same outcome value, the table nonetheless lists contradictions by assigning a "C" to the outcome value. In the truth table above, there are five configurations with mixed, or contradictory, outcomes (1,2,11,7). The top case in row #1, for example, have contradictory outcomes—three exhibit the outcome 1, while seven do not.

- You can now (optionally) specify the minimum frequency or proportion of cases as a requirement for the inclusion in the truth table.

In general, this assessment of the evidence is easier to accomplish with the crisp truth table algorithm.

E) Rules for Including Configurations

- In order to specify the rules for including configurations in the truth table, choose
  Analysis
  Crisp-Sets
  Quine....

- Click on the *Frequency* option and the following window will open (note that the highlighted box is the Frequency box):

- You can either determine the minimum frequency of cases for each configuration or the minimum proportion. (The above display-set window shows the option of minimum frequency.)

- Additionally, you can determine whether you want different minimum frequencies for the three different kinds of outcomes. In the example above, the researcher chose to omit 'no-case configurations' if the 0 outcome is represented by at least 3 cases, and the 1 outcome by at least 1. Configurations with "Don't Care" outcomes were excluded via the "Specify" tab.

- If you decide to set the minimum frequency to the same level for all three possibilities of outcomes, choose *All Outcomes*, and set the desired limit.

- If you choose to set the limit of cases for each configuration as a proportion, click on the *Minimum Proportion* option and the following window will appear:

- By choosing to determine the limits via proportions for each outcome, you will also have to determine the denominator for proportions. The options are
  - Total N
  - Outcome

  In the example above, the researcher decided to include configurations with the outcome value 1 only if they are represented by a minimum proportion of cases of 10%. Applied to the example of this chapter, this limit of 10% excludes all existing configurations with the outcome 1—the configuration of rows 4 and row 8 are represented only by 9.1% and 7.1% of all cases, respectively (see truth table on page 42).

- In order to inspect the limitations you have set for the inclusion of configurations, click on the *Preview* button. The following will be displayed in the main window:

The first two rows of this output indicate the data file location and the specified outcome as well as the causal conditions.

What follows is summary of the cases of the data set, including the number and percentage of the valid and missing cases, and the number and percentage of the 0, 1, and "Don't Care" configurations.

The next three lines, that, indicate the limits set for inclusion in the truth table (compare to the minimum frequency example on page 43).

Finally, the table summarizes the modified truth table. The last row of this table indicates the number and proportions of configurations and the cases that have been excluded according to the researcher's specifications (7 configurations with 3 cases).

7) Setting Configurations to Minimize

- In order to select the configurations to minimize, there is one to coordinate on the solution, and these to see in "Don't Cares," choose:
  Analyze
    Coup-Sets
      Quine...

- Click on the Specify option and the following window will open (note that the highlighted box is the Specify box):

In order to explore the options given in the window above, it is necessary to clarify the different possible output codes for each of the configurations. Imagine the following truth table as part of a data set:

	V1	V2	V3	Cases	Sentences	(Output Code)
Row 1	0	0	0	1	0	1
Row 2	0	0	1	0	0	0
Row 3	1	1	0	1	1	1
Row 4	1	1	1	0	1	0
Row 5	1	1	1	0	1	0

The output code of each configuration can be one of the following possibilities:

Positive Cases (1): For all cases in these kinds of configurations the outcome is present (see row 1).

Negative Cases (0): For all cases in these kinds of configurations the outcome is present (see row 2).

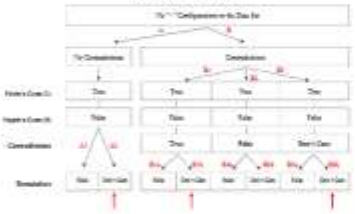
Don't Care Cases (-): For all cases of these configurations the researcher has assigned the "Don't Care" value in the data spreadsheet. This allows the computer to treat these configurations having either outcome present or having the outcome absent, depending on the situation (see row 3). This assignment is rarely used.

Contradictions: For all cases have the same outcome value. Rows 4 of the truth table demonstrates this by having only 2 of the 5 cases in this configuration having the outcome present (1 cases have the outcome absent).

Remainders: These are configurations with no cases in the data set (see row 5).

Please note that in Quine minimization "Don't Care" and "Prime" are equivalent. Only new assignments really matter for the Quine menus: "True" and "Don't Care."

Eight "Main Examples" Ways:



G) Options

1) Prime Implicants

Prime implicants (PIs) are product terms that are produced using minimization rules (e.g. rules that combine rows that differ on only one clause of they have the same output value). For example: ABC combines with ABC to produce AC. AC, therefore, is the prime implicant that covers the two primitive Boolean expressions ABC and ABC. In other words, ABC and ABC are subsets of AC, or AC implies ABC and ABC.

Often, though, there are more reduced prime implicants that are needed to cover all the original primitive expressions and the user has the option to choose from among those that are "logically real" using the prime implicant chart. (For a more comprehensive discussion of the use of Prime Implicants, refer to *The Comparative Method* page 97.)

- In order to specify whether you want to exercise this option, choose:
  Analyze
    Coup-Sets
      Quine...

- Click on Options and the following window will open (note that the highlighted box is the Options box):

- In order to be able to select among prime implicants that are logically equivalent (i.e., that cover the same truth table rows), choose "YES" when asked to select prime.

implicants by hand. If YES is selected, the program will report all of the possible choices in the solution. A partially reduced PI chart will, essentially be reproduced in the output, with options under the headings) "One of the Following:"

Choosing Solution Terms Using the Prime Implicant Chart

- If the user opts to pick prime implicants by hand, the Prime Implicant Chart window will appear only when there are logically equivalent prime implicants to choose from.

  - To choose prime implicants (PIs), the program employs an algorithm that attempts to reduce the table until no further simplification is possible, beginning with essential PIs (which uniquely cover specific rows in the truth table) that must appear in the solution. If the algorithm is run and the table cannot be fully reduced, the user may select the PIs to be used, based on theoretical, test coverage or cost factors.

  - The Prime Implicant Chart has two tabs. Selecting "Solution" will display essential PIs that must be included in the solution. If this field is blank, there are no essential PIs.

  - The Prime Implicant Chart tab displays the possible prime implicants for the user to choose. Each column in the chart represents a different truth table row that is covered by more than one prime implicant. The "Data" field across the top displays the truth table row in question (the one that needs to be covered).

  - The "Prime" field describes the PI that the user may select. Each row in the chart represents one PI that may be selected. Clicking on the interior of the table will cause the minterm information and the row information to be displayed for that cell.

  - A PI is selected by clicking on the cell in the first column with the combination of 1's, 1's, and -'s that represents the PI. If you change your mind about your selection, you can click "Clear All" to unselect the PI. "Mark All" may be used to select all PIs.

  - The number to the top left corner of the chart describes how many PIs need to be selected. The numbers at the top of the columns describe how many PIs need to be selected for each truth table row in question. (Remember that the columns in this chart represent truth table rows that still need to be covered.) As an appropriate PI is selected, both the number in the corner and the number at the top of the columns will decrease by 1. If there is more than one truth table row with multiple PIs represented in the columns of this chart, the user is required to choose at least one PI for each. The cells representing the PIs that correspond to each row are colored red, when the PI is selected this cell, column of the possible PIs for the truth table row will turn grey. When one or more PIs are selected for each truth table row, the cell in the upper left corner will say "0" and will turn green.

For this chart, the user could select the first and third PI, the first and fourth PI, the second and third PI, or the second and fourth PI. Of course, additional PIs could be selected. Any these four combinations of choices would provide minimal coverage of the remaining truth table rows, represented in the columns of the chart.

Frequencies for Solution Terms

- In order to specify 'solutions' you want output frequencies for the solution term:
  - Analyze
    - Change Data
      - Quote...

- Click on Options and select YES or NO for "Select Output Frequencies Solution Terms."

This option will include the number of cases for each of the crisp set solution terms. In the solution term below, for example, 13 cases of the data set have the outcome with a mixed combination of the absence of "mechanical" combined with the absence of "mobility."

Mobility(-) mobility (-1) +
Mechanical ABSENTEEISM (-2) +
CONSUMPC. ABSENTISM (-4) +
TRADITIONAL consumpc absence (-4)

This information is also supplied by the truth table algorithm via the calculation of the "coverage" of solution terms.

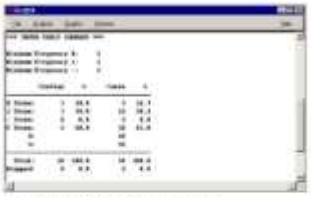
Dt Output (Crisp Sets)

Once you have constructed the truth table according to your specifications, the main expanse will show you the following output:

Output from Quine-Procedure

The first part of the output describes your data. The first two rows indicate the file directory and the model you specified. What follows is a summary of the truth table with the number and percentages of cases in each kind of configuration. Then, the output displays what kind of algorithm you used, and which configurations were minimized and which were set to consumpt. In the example below, the configurations with the outcome were minimized, whereas the configurations without the outcome, the contradictions, and the remainder were set to consumpt.

The truth table summary tells you whether you have included any of your configurations, how many cases are in each of the configurations, and how many are left in your analysis. In the example below, none of the configurations have been dropped.



The last part of the output yields the solution of your crisp-set analysis.

Results are caused by a combination of either (1) the absence of parents' multimedialism, and the presence of a mobile class of parents and absentee blended elites or (2) the presence of parents' multimedialism and a mobile class of parents and the absence of commercial, agriculture and absentee blended elites.

Output from Truth Table Procedure

Once the truth table has been specified and minimized, the main menubar will show you the output. The first part of the output describes the data. The first two rows indicate the file directory and the model you specified. The next row lists the number of truth table rows read for the analysis. Then, the output displays what kind of algorithm you used, and which configurations were minimized.

The complex solutions is always presented first, then the parsimonious, then the intermediate. All three are labeled. Also reported are the frequency and consistency cut-offs that were used. Rather than repeating the actual cut-offs used (e.g., in the details and

code function of the truth table spreadsheet), the output reports the lowest-frequency configuration actually used and the lowest consistency score, again, among those actually used in the procedure. For example, if I've selected a consistency cut-off of 0.80, but there was a gap in the observed consistency scores between 0.90 and 0.75, then 0.90 would be reported as the consistency cut-off value because it would be the lowest consistency among the cases coded with an output equal to true (or 1.0). The complex solution is as follows:

```
file:  C:\Documents and Settings\Desktop\barrett.csv
model: outcome = f(causal1, causal2, causal3, causal4)

 rows:      8

algorithm: quine-mccluskey
     true: 1

--- COMPLEX SOLUTION ---
frequency cutoff: 1.000000
consistency cutoff: 1.000000

                      raw        pi7738       inclusion
                 coverage    coverage    consistency
                 ----------  ----------  ----------
causal1*causal2*causal3*~ca  0.750000    0.333333    1.000000
~causal1*causal2*causal3*~c  0.750000    0.333333    1.000000
solution coverage: 0.916667
solution consistency: 1.000000
```

The report of the frequency and consistency cutoff values is followed by the solution. When the user selects "Specify Analysis," there will be only one Truth Table Solution section. When "Standard Analyses" is selected, solutions will be generated for the complex, parsimonious, and intermediate configurations and will be labeled as such. In addition, the intermediate solution will contain the list of assumptions about causal conditions specified by the user via the dialogue box.

The solution provides a line for each separate path to the outcome. In this example, there are two combinations of conditions linked to the outcome, democratic survival, set being countries combined with being literate and wealthy, and set being countries combined with being literate and industrial. Consistency and coverage scores (including raw and unique coverage) are described herein and explained in detail in *Redesigning Social Inquiry: Fuzzy Sets and Beyond*.

The more parsimonious solution for this truth table is:

```
file:  C:\Documents and Settings\Desktop\barrett.csv
model: outcome = f(causal1, causal2, causal3, causal4)

 rows:      8

algorithm: quine-mccluskey
     true: 1-0

--- PARSIMONIOUS SOLUTION ---
frequency cutoff: 1.000000
consistency cutoff: 1.000000
```



```
                      raw        pi7738       inclusion
                 coverage    coverage    consistency
                 ----------  ----------  ----------
causal1*causal2*causal3*~ca  0.750000    0.333333    1.000000
causal1*causal2*causal4      0.750000    0.333333    1.000000
solution coverage: 0.833333
solution consistency: 1.000000
```

Again, the output displays what kind of algorithm was used, and which configurations were minimized. The solution again indicates two paths to survival, set being countries combined with being wealthy, and set being countries combined with being industrial.

Intermediate solutions are usually the most interpretive, but the parsimonious solution does indicate which conditions are essential to distinguishing between positive and negative cases.

6 FUZZY-SET ANALYSIS

This part of the manual addresses the analysis of fuzzy sets, discussed in depth in *Fuzzy-Set Social Science* (Ragin, 2000) and *Redesigning Social Inquiry* (Ragin, 2008). Instead of allowing only two mutually exclusive states, membership and nonmembership, fuzzy sets extend crisp sets by permitting membership scores in the interval between 0 and 1. There are many ways to construct fuzzy sets. Three common ways are

- four-value fuzzy sets (0, .33, .67, 1)
- six-value fuzzy sets (0, .2, .4, .6, .8, 1)
- and continuous fuzzy sets (any value ≥ 0 and ≤ 1)

There are two fuzzy-set algorithms, the "inclusion" algorithm and the "truth table" algorithm. The inclusion algorithm is described in *Fuzzy-Set Social Science*; the truth table algorithm is described in *Redesigning Social Inquiry* (Ragin 2008) and also in *Configurational Comparative Methods* (Ragin and Rubinson, 2008). The inclusion algorithm is currently being overhauled to make it more robust and also to make it more consistent with the truth table approach. Thus, access to the inclusion algorithm is currently blocked. The truth table algorithm has proven to be more robust and is the preferred approach for now.

A) Operations on Fuzzy Sets

The logical operators AND and OR are used in the fuzzy-set algorithms but are different from the use in crisp-sets. What follows is an introduction of the common operators: logical AND, and logical OR.

Logical AND With fuzzy sets, logical AND is accomplished by taking the minimum membership score of each case in the sets that are intersected. For example, if a country's membership in the set of poor countries is .34 and its membership in the set of democratic countries is .91, its membership in the set of countries that are poor and democratic is the smaller of these two scores, .34.

Logical OR Two or more sets also can be joined through logical OR—the union of sets. For example, a researcher might be interested in countries that are "developed" OR "democratic" based on the conjecture that these two conditions might offer equivalent bases for some outcome (e.g., bureaucracy rules government). Conveniently, crisp categories might be used to compile a complete list of countries that are "developed or democratic" (i.e., countries that have one or both characteristics). With fuzzy sets, the researcher focuses on the membership of each case's membership in the component sets. That is, membership in the set formed from the union of two or more component sets is the maximum value of the case's membership in the component sets. Thus, if a country has a score of .15 in the set of democratic countries and a score of .93 in the set of developed countries, it has a score of .93 in the set of countries that are "democratic or developed."

Negation Like in crisp sets, fuzzy sets can be negated. In crisp set logic, negation switches membership scores from 1 to 0 and from 0 to 1. This simple mathematical principle holds in fuzzy logic as well. The restriction (membership values are not restricted to the fourteen values 0 and 1 but spread to values between 0 and 1 as well. To calculate the membership of a case in the negation of fuzzy set A, simply subtract its membership in set A from 1, as follows:

Fuzzy membership in set not A = 1 – fuzzy membership in set A

This can be displayed as ~A = 1 – A, where the subscript "1" indicates the "set" case, the set "not A" is represented as ~A, and the symbol "~" denotes negation. Thus, for example, if the United States has a membership score of .70 in the set of "democratic countries," it has a score of .21 in the set of "not democratic countries."

B) Fuzzy Sets, Necessity, and Sufficiency (Fuzzy Subset Relations)

Subset principle and arithmetic relationship between membership scores in CRISP sets. Consider the example of state breakdown being a necessary but not sufficient condition of racial revolutions in *Fuzzy Set Social Science*. It follows logically that if a condition is necessary but not sufficient for an outcome, then instances of the outcome will constitute a subset of instances of the cause. Another way to understand the subset relationship is in terms of the arithmetic relationship between crisp-set membership scores (1s and 0s). If instances of the outcome are a subset of instances of the cause, then the Boolean value of the outcome (1) versus (0) will be less than or equal to the Boolean value of the cause.

Subset principle and arithmetic relationship between membership scores in FUZZY sets. With fuzzy sets it would be difficult to "select" countries with the outcome (the social first step in the crisp-set analysis of necessary conditions) because countries vary in their degree of membership in the set displaying social revolutions. Likewise, it would be very difficult to evaluate cases' agreement with respect to the relevant causal conditions (state breakdown) because they vary in their membership in this set as well.

Fortunately, the subset principle and the arithmetic relationship between membership scores holds for fuzzy sets as well. With fuzzy sets, set A is a subset of set B if the membership scores of cases in set A are less than or equal to their respective membership scores in set B. Furthermore, when fuzzy membership scores in the outcome are less than or equal to fuzzy membership in the cause, then it is possible to argue that instances of the outcome are a subset of instances of the cause. Figure 1 displays this arithmetic relationship in two dimensions. When researchers find this pattern, they might cite this evidence as support for an argument of causal necessity.

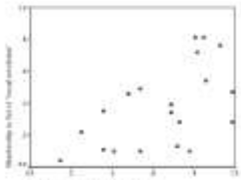


Figure 1: Plot of "social revolution" against "state breakdown"

The evaluation of sufficiency can be seen as a test of whether the cases displaying the causal conditions form a subset of the cases displaying the outcome. As shown above, another way to understand the subset relationship is in terms of the arithmetic relation between membership scores. In order to argue that a cause or causal combination is a sufficient for the outcome, the fuzzy membership scores in cause have to be less than or equal to the fuzzy membership in the outcome.

Consider the following example taken from *Fuzzy-Set Social Science*, p. 236ff. Figure 2 displays the arithmetic relationship between the sufficient causal combinations (*ethnic-class homogeneity*) against the outcome (ideological conflict). The upper-triangular plot shown in Figure 2 is a direct reflection of the fact that membership scores in the fuzzy set "race and class homogeneity" are less than or equal to membership scores in the fuzzy set "ideological conflict."

Note the important difference between the application of the subset principle to the assessment of sufficiency and its application to the assessment of necessity. To demonstrate necessity the researcher must show that the outcome is a subset of the cause. To support an argument of sufficiency, the researcher must demonstrate that the cause is a subset of the outcome.

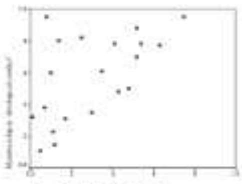


Figure 2: Plot of "ideological conflict" against "race and class homogeneity"

C) Using the Fuzzy Truth Table Algorithm

This method for analyzing fuzzy sets using Truth Tables was introduced in version 2.0 of fsQCA. It is described in detail in Ragin's (2008) *Redesigning Social Inquiry: Fuzzy Sets and Beyond* and in Rihoux and Ragin's (2008) *Configurational Comparative Methods: Qualitative Comparative Analysis (QCA) and Related Techniques.*

The fuzzy truth table algorithm can be conceptualized as a bridge with three pillars. The first pillar is the direct correspondence that exists between the rows of a crisp truth table and the corners of the vector space defined by fuzzy set causal conditions (see Ragin 2000). The second pillar is the assessment of the distribution of cases across different logically possible combinations of causal conditions (or corners of the vector space). Some corners of the vector space may have many cases with strong membership while other corners may have cases with only weak membership. The third pillar is the assessment of the consistency of the evidence for each causal combination with the argument that it is a fuzzy subset of the outcome. The truth table algorithm involves establishing these three pillars to construct a crisp truth table, at which point the analysis proceeds similar to the crisp algorithm. This section will explain the steps involved in recording the results of multiple fuzzy set analyses in a crisp truth table and then analyzing that table.

Data

Fuzzy set data can be imported from other programs or created in fsQCA as described in Sections 1. and 2. This chapter will use the example of countries with weak class voting from Ragin (2005). The table below depicts the data sheet:

name	Country Identifier
affluent	Affluent
inequal	Substantial Income Inequality
manuf	Strong Manufacturing Sector
unions	Strong Unions
weakcv	Weak Class Voting

Interval and ratio scale data can be converted to fuzzy set membership scores using the "calibrate" procedure described in section 2 of the manual (Data Editor) and in Ragin (2008).

Analysis

The truth table algorithm incorporates a two-stage analytic procedure. The first step consists of creating a truth table from the fuzzy data, which includes specifying the outcome for each configuration and determining which configurations to include in the analysis. The second step involves specifying the causal conditions and outcomes to

minimize. These steps must be performed in conjunction and both must be performed for each separate analysis.

» In order to list the data in the output window, choose:
Analyze
  Fuzzy Sets
    Truth Table Algorithm......

The following window will open:

» Identify the variable you want to explain and transfer it into the Outcome field.

» Choose causal conditions one at a time and click them over to the Causal Conditions field.

» Click on the Run button and the following window containing the truth table will appear:

• The truth table will have 2^n rows, where n represents the number of causal conditions, reflecting all possible combinations of causal conditions. The 1s and 0s indicate the different corners of the vector space defined by the fuzzy set causal conditions. For each row, a value for each of the following variables is created:

number	the number of cases with greater than 0.5 membership in that corner of the vector space. Shows in parentheses is the cumulative percentage of cases, beginning with the most populated vector of the vector space
consist	the degree to which membership in that corner of the vector space is a consistent subset of membership in the outcome. (For crisp sets, this is the proportion of cases in a given crisp truth table row that display the outcome.)
pre	an alternative measure of consistency for fuzzy sets based on a quasi-proportional reduction in error calculation. (In crisp sets this will be equal to *consist*)
product	the multiplicative product of *consist* and *pre*. This helps identify gaps in the upper ranges of set-theoretic consistency, to help establish a consistency threshold for the outcome.

Note that the values labeled in the outcome ('assim') in this example is blank. It is up to the researcher to designate the outcome for each configuration and to enter it into the spreadsheet using the following procedure.

• The researcher must begin by developing a rule for classifying some configurations (vector spaces corners) as relevant and others as irrelevant, based on the number of cases residing in each corner of the vector space defined by the causal conditions. This is accomplished by selecting a frequency threshold based on the number of cases with greater than 0.5 membership in each configuration, as shown in the 'number' column. When the total N (number of cases) is relatively small, the frequency threshold should be

1 or 2. When the total N is large, a more substantial threshold should be used. It is very important to examine the distribution of cases across conditions, to identify the more populated vectors of the vector space. In general, the configurations selected should capture at least 75-80% of the cases.

• Cases can be sorted by their frequency by clicking in the number column and choosing:

Sort
Descending

• After setting and selecting a threshold, delete all rows that do not meet the threshold. If the cases have been sorted in a descending order according to number, click on the first case that falls below the threshold and then choose:

Edit
Delete current row to last row

If cases have not been sorted then these cases that do not meet the threshold can be deleted individually by selecting the row and then choosing:

Edit
Delete current row

• The next step is to distinguish configurations that are consistent subsets of the outcome from those that are not. This determination is made using the measures of set-theoretic consistency reported in the *consist*, *pre*, and/or *product* columns. Values below 0.75 in the *consist* column indicate substantial inconsistency. It is useful to sort the consistency scores in descending order to evaluate their distribution (this should be done after removing rows that fail to meet the frequency threshold). Sorting is accomplished by clicking in the *consist*, *pre*, or *product* column and choosing:

Sort
Descending

Identify any gaps in the upper range of consistency that might be useful for establishing a consistency threshold. *Keep in mind that it is always possible to examine several different thresholds and assess the consequences of lowering and raising the consistency cut-off.*

• It is now necessary to indicate which configurations exhibit the outcome and which do not. Place a 1 in the outcome column (*assim*) in this example) for each configuration whose consistency level meets and/or exceeds the threshold. Place a 0 in the outcome column for each configuration whose consistency level does not meet the consistency threshold.

• Alternatively, one can use the "Delete and code" function to automate this process. Select:

Edit
Delete and code

In the first field, the frequency threshold is selected. The default number of cases is 1, but may be changed by typing the selected frequency threshold into the field. In the second field, the consistency threshold is selected. The default consistency is 0.8, but this may be changed by typing the selected consistency threshold into the field.

Click "OK". The program will delete rows where the frequency threshold is not met, and will code the outcome as 0 or 1 depending on the selected consistency threshold.

• The following window displays the truth table that would appear after:

1. applying a frequency threshold of 1 to the data and eliminating configurations that do not have any observations (8 configurations)
2. selecting a consistency threshold of 0.8 and placing a 1 in the *assim* column for configurations with 0.81 consistency or greater (2 configurations) and a 0 for cases with lower consistency (6 configurations)

From this point in the procedure, there are two possibilities for analysis: specifying the analysis menu selecting "Standard Analyses" ("*Standard Analyses*" is the *recommended choice because this is the only way to generate the "Intermediate" solution*

"Specify Analysis" Option

• Once the truth table is constructed select Specify Analysis to bring up the Truth Table Analysis Window

• In the Specify panel, set Positive cases to True and all the others to False to yield the most complex solution. This solution appears as follows:

• To derive the most parsimonious solution, set Positive cases to True, Negative Cases, Don't Care, and Contradictions to False, and Simplicants to Don't Cares. The window will appear as follows:

+ All other options (the prime implicants and output frequencies) can be set following the same procedure outlined for ring sets. *As guessed, however, these options are not useful when using the truth table algorithm.*

"Standard Analyses" Option

+ Once the truth table is constructed select "Standard Analyses." This procedure automatically provides the user with the complex, intermediate, and parsimonious solutions. "Standard Analyses" is recommended over "Specify Analysis."

Please refer back to the discussion of the "Standard Analyses" procedure for crisp sets. The fuzzy set procedure is parallel. Three solutions are derived, the complex, the parsimonious and the intermediate. Each solution is based on a different treatment of the remainder configurations:

> **Complex**: remainders are all set to false, no counterfactuals.
>
> **Parsimonious**: any remainder that will help generate a logically simpler solution is used, regardless of whether it constitutes an "easy" or a "difficult" counterfactual case.
>
> **Intermediate**: only remainders that are "easy" counterfactual cases are allowed to be incorporated into the solution. The designation of "easy" versus "difficult" is based on user-supplied information regarding the connection between each causal condition and the outcome.

D) Output for "Specify Analysis" Option

Once the truth table has been minimized, the user window will show you the following output. The output shown is for the most complex solution, obtained by using the "Specify Analysis" option as described above.

The first part of the output describes the data. The first two rows indicate the file directory and the model was specified. The next row lists the number of truth table rows (from the coded truth table spreadsheet) used for the analysis. Then, the output displays what kind of algorithm was used, and which configurations were minimized and which were set to counterfact. In the example below, the configurations with the outcome (1) were minimized, whereas the configurations without the outcome (0), don't cares (-), contradictions (C), and remainders (L) were set to counterfact (false).

The last part of the output shows the solution of your analysis. First, frequency and consistency cutoffs are listed. This is followed by the solutions. When the "Specify Analysis" option is selected, there will be one Truth Table Solution section. When "Standard Analyses" is selected, three solutions will be provided (complex, parsimonious, and intermediate).

In this example, the following solution for the most complex solution was reported:

Weak class voting is a product of high membership in the set of affluent countries, weak membership in the set of countries with a high percentage of workers in manufacturing, and weak membership in the set of countries with strong unions.

The first two lines list the frequency and consistency cutoffs. The consistency cutoff will list the lowest consistency value above the cutoff value specified by the user. Here, 0.8 was given as the consistency cutoff, and the lowest actual value above 0.8 was 0.928571.

The solution provides a line for each separate path to the outcome (in this example only one path exists: GDP*manPop). The output also computes the consistency and coverage for each solution term and the solution as a whole (these computations are discussed below).

The output for the most parsimonious solution of this same truth table is:

Again, the output displays the algorithm used, and which configurations were minimized and which were set to counterfact. In the example above, the configurations with the outcome (1) were minimized, configurations without the outcome (0), don't cares (-), and contradictions (C), were set to counterfact (false), and remainders (R) were set to don't care.

The solution indicates only one path to weak class voting. Countries with weak membership in the set of countries with strong unions explain weak class voting.

E) Output for "Standard Analyses" Option

Output for the Standard Analyses will look slightly different:

Now switch the complex, intermediate, and parsimonious solutions will be displayed. Depicted here is the intermediate solution. The "Assumptions" portion of the output displays the options previously selected in the "Intermediate Solution" window; here, each was selected such that when present, the condition should contribute to the outcome.

In this solution, weak case voting is a product of high membership in the set of efficient causes and weak membership in the set of causables with strong causes.

7) Consistency and Coverage

The output includes measures of coverage and consistency for each solution term and for the solution as a whole. Consistency assesses the degree to which solution terms and the solution as a whole are subsets of the outcome. Coverage assesses how much of the outcome is covered (or explained) by each solution term and by the solution as a whole. These measures are computed by operating the original fuzzy data set in light of the solution (composed of one or more solution terms). The degree to which cases in the original dataset have membership in each solution term and in the outcome forms the basis of consistency and coverage measures. More specifically, consider the following data table with three causal conditions (A, B, and C) and an outcome (Y; all measured in fuzzy sets.

Causal Conditions Membership			Outcome Membership	Solution Membership			Solution Consistency		
A	B	C	Y	A*B	A*C	A*B + A*C	$I_{(AB)}$	$I_{(AC)}$	$I_{(AB+AC)}$
1	1	1	1	1	1	1	1	1	1
0	1	0	0	0	0	0	0	0	0
0	1	1	1	0	1	1	0	1	1
0	0	1	1	0	1	1	0	1	1
1	0	1	1	1	1	1	1	1	1
0	1	1	0	0	1	1	0	1	1
1	0	0	1	1	0	1	1	0	1
1	1	1	1	1	1	1	1	1	1
1	0	0	1	1	0	1	1	0	1
1	1	1	1	1	1	1	1	1	1
1	1	1	1	1	1	1	1	1	1
1	1	1	1	1	1	1	1	1	1
Sum:			9.1	9.0	9.1	9.1	9.0	9.0	9.0

The minimal output for this analysis is shown below. The solution is comprised of two terms: $A*B + A*C$. To calculate consistency and coverage, several intermediate values must be calculated first. Membership in the outcome (Y_i) is the sum of outcome membership scores across all cases in the data. A case's membership in each solution term is computed as the minimum of the cases membership in each causal condition of the term. Membership in the first solution term ($I_{(AB)}$) is the sum of membership in that solution term across all cases. Similarly, membership in the second solution term ($I_{(AC)}$ is the sum of membership in that solution term across all cases. Membership in the solution ($I_{(AB+AC)}$) is defined as the maximum of a case's membership across the solution terms.

```
                raw          unique
               coverage      coverage      consistency
              ----------    ----------    ----------
A*B           0.450000      0.100000      0.978261
A*C           0.450000      0.100000      0.978261
solution coverage: 0.650435
solution consistency: 0.961538
```

Consistency assesses the degree to which membership in each solution term is a subset of the outcome. Consistency is computed by first computing the consistency of each case. For any solution term, a case's consistent if membership in the solution term is less than or equal to membership in the outcome. If a case's membership in the solution term is greater than its membership in the outcome (i.e., it is inconsistent), then the case is given a score that equals its membership in the solution. These scores are then summed (yielding $I'_{(AB)}$) and divided by the sum of memberships in the solution term ($I_{(AB)}$). Thus, consistency for the first solution term is $I'_{(AB)} / I_{(AB)} = 9.0 / 9.1 = .91$ and for the second solution term is $9.0 / 9.1 = .974$.

Solution Consistency measures the degree to which membership in the solution (the set of solution terms) is a subset of membership in the outcome. The minimum of each case's membership across solution terms ($A*B + A*C$) is compared to membership in the outcome. If membership in the solution is less than or equal to membership in the outcome, then the case is given a score that equals its membership in the solution term. If membership in the solution term if greater than membership in the outcome (i.e., it is inconsistent), then the case is given the outcome score (the lower of the two scores). These scores are summed and then divided by the sum of memberships in the solution term ($I'_{(AB+AC)} / I_{(AB+AC)}$). The consistency for the solution in this example is $9.0 / 9.2 = .980$.

Solution coverage measures the proportion of memberships in the outcome that is explained by the complete solution. The consistent membership scores are summed across cases and then divided by the sum of the membership in the outcome: $I'_{(AB+AC)} / I_Y = 9.0 / 9.2 = .994$.

Raw coverage measures the proportion of memberships in the outcome explained by each term of the solution. Raw coverage is computed for each solution term from the original data by dividing the sum of consistent membership in the solution term by the sum of membership in the outcome. Raw coverage for the first solution term is $I'_{(A*B)} / I_Y = 9.0 / 9.2 = .913$ and for the second term is $4.0 / 9.2 = .967$.

Unique coverage measures the proportion of memberships in the outcome explained solely by each individual solution term (memberships that are not covered by other solution terms). This is computed by first removing the term from the solution and computing solution coverage. In this example, solution coverage after removing the first solution term ($I'_{(A*C)}$) is simply $I'_{(A*C)}$ (with a solution terms the reduced solution will contain n-1 solution terms). The reduced coverage term is then divided by the full solution coverage and subtracted from the raw coverage to give the unique coverage for the omitted solution term. For the first solution term ($I'_{(A*B)}$) unique coverage equals $I'_{(AB+AC)} - I'_{(AC)} = 9.0 / 9.2 - 4.0 / 9.2 = .978 - .435 = .543$. Unique coverage for the second term equals $9.0 / 9.2 - 5.0 / 9.2 = .094$.

Appendix G: Email Debate on the Term “Methodology”

Hello

Your feedback is much appreciated and valued. I have used many a published article advanced via BPTrends in certain aspects of my proposal.

You are right when you say that my work will not add to the "process" knowledge. The reason being is that the research or work is not about the mechanics of the process and it's improvements or design. It is about executing a BPR programme of work to ensure benefits are realised as stated and there is a balance via trade-offs when it comes to applying the success factors that have been researched by many academics.

I am taking a project management and execution approach using soft systems methodology as a problem solving technique to determine if the "CI" methodologies cater for a true project management disciplined approach or is similar to an SDLC being executed within a PDLC.

I do however disagree with you when it comes to likening methodology to cooking. As I do believe there is a distinct difference between a "method" and a "methodology". A method, yes, is directly associated to executing steps in a certain prescribed way to achieve the desired result. A methodology however irrespective of "heuristic", "algorithmic" or any other type provides guidelines based on certain principles and frameworks that constitute artifacts and deliverables based on stages that can be modified to attune to a situation and problem to ensure a desired outcome, not a specific result. As rightly pointed out by yourself that many people use the wrong CI methodologies in projects.

Hence the research. As mentioned earlier I do value your feedback as it has indirectly actually supported the need for my research into the specifics of Programme/Project management and execution of BPR initiatives within a service industry.

I will gladly submit papers, for review and possible publication. Once again thanks for the feedback. Can I ask if you do get time and if I do submit content to yourself any feedback would be appreciated, as I do value the critical and constructive manner in which it is portrayed.

Much appreciated.

Thanks

Imtiaz Abdul Kader

-----Original Message-----

Mr. Kader,

BPTrends will consider publishing any papers submitted. We don't publish research, as such, but papers we think would be of interest to our readers. So, as you generate things you think might be interesting, we will be happy to look and give you feedback as to why we might or might not think the paper appropriate. So, whatever else, submit papers when you have them, with the understanding that they will be evaluated on their own merits.

As to my giving feedback -- I am happy to try, but promise nothing in the way of a sustained effort. I am rather busy and if you ask for feedback at a time when I have the time, I will provide what I can.

I skimmed your proposal and think you have proposed an ambitious project. I'm not sure it can be accomplished in any way that will actually add anything concrete to our knowledge of process -- and I will try to explain why.

It starts with: What is a methodology. Let's say a methodology is a set of steps that you are instructed to follow to get a result. This

works fine if we are cooking, or even building a bridge. We have theories that are strong enough, and we control the environment sufficiently, that you can imagine working your way through the steps and getting a predictable result. Moreover, if you don't get the desired result, it should be a matter of retracing your steps to see where you went "off methodology," which led to failure. You didn't add the right amount of sugar, or you used the wrong formula to calculate load capacity.

Let's refer to these methodologies as "algorithmic methodologies." They really are a set of steps that need to be followed in a precise manner, and they really do guarantee success if followed.

Process change has its methodologies, but they are "heuristic methodologies." In essence, the methodology prescribes a set of steps (a project) and suggests "considerations" and "possible interventions"
that you may encounter or try at each step. In many situations a
heuristic methodology is the best we can do, but it doesn't guarantee success. In fact, its almost circular. Methodology Z works, if and only if, you apply it to situation Z -- a situation that will respond to the interventions prescribed by Methodology Z.

BPTrends has spent years working on a holistic methodology. From our perspective Lean and Six Sigma are only useful for a small subset of the situations we commonly encounter. Thus, if I have an insurance process problem -- and the the root cause is bad decisions taken at various points -- I may decide that defining business rules and either teaching
them to employees, or embedding them in software is the way to go.
Neither Lean or Six Sigma is likely to get me to business rules -- so in this situation, Lean or Six Sigma will be used in vain and do little to improve the organization's performance.

I can show that Lean works by starting with a process problem that involves lots of unnecessary activities. Lean is good at identifying and recommending the elimination of unnecessary activities, and hence, in such a situation, Lean would prove useful.

So where do you begin on this effort? Choosing the type of problem, to assure the methodology you choose will work, or...

Let's assume you were to adopt a methodology like BPTrends that really tries to consider a very wide variety of process problems. Even we have problems because process interventions involve making changes in the organization and nature of the organization. In a different context, a philosopher likened this to "rebuilding a ship at sea in the middle of a storm"

Assume that after quite a bit of analysis, we came up with a list of 22
interventions -- this is typical of our approach. We prioritize the
interventions and find that 5 would probably generate 85% of the change
we are looking for. So we focus on those. 1) One involves changing
the way a specific activity is done, 2) one involves changing a supplier, 3) one involves changing an employee incentive system, 4) one involves changing the way an unit is managed (for all practical purposes, changing the manager), and 5) one involves a new training
program for some of the staff. Chances are, if the organization isn't
very committed to process work, senior management won't let your team do 2), 3), or 4). If they do agree to do everything, they will spread the changes out over two years and make it hard to see which contributes what to the solution.

Evaluating a holistic process methodology would be very hard. In essence, everything in the organization, from strategy and the business model to process work and product design is on the table if you do comprehensive process improvement -- and resistance if fierce. If you do something less -- and simply tackle processes that have too many activities, then you can eliminate or consolidate activities, but... in most cases you won't make too much difference in the overall performance of the organization.

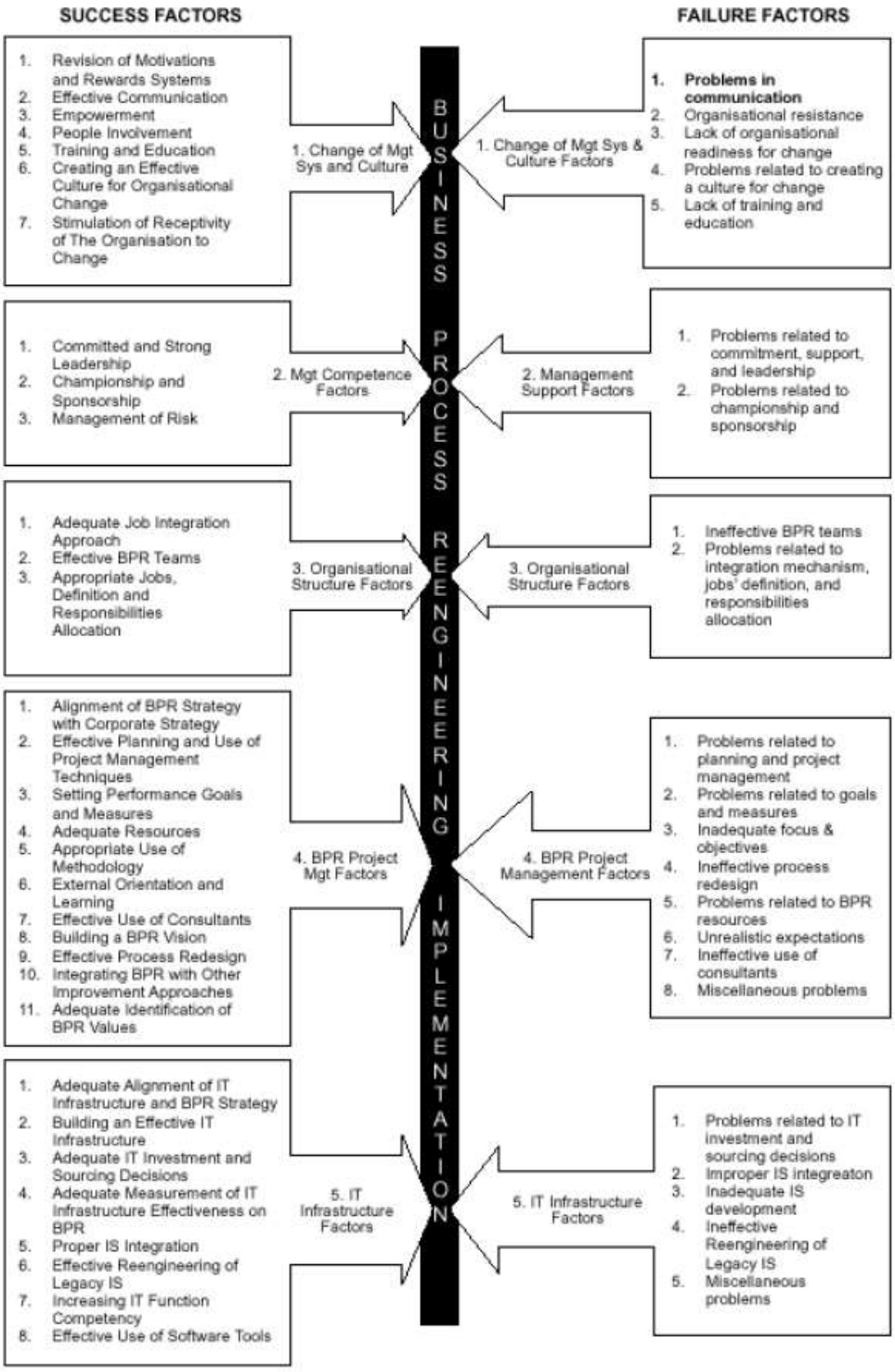
You might try to think of ways to constrain your study to focus on part of the whole. That would make the results less useful to practitioners in the field, but would make it easier to get concrete data that might prove or disprove a specific hypothesis.

In any case I've given you some advice off the top of my head. If you want more, let me know,

Paul Harmon

Paul Harmon
Executive Editor, Business Process Trends Chief Methodologist, BPTrends Associates
1819 Polk Street #334, San Francisco, CA 94109 Office/Home +1 415 346 1425 Cell +1 415 218 8417
pharmon@bptrends.com www.bptrends.com

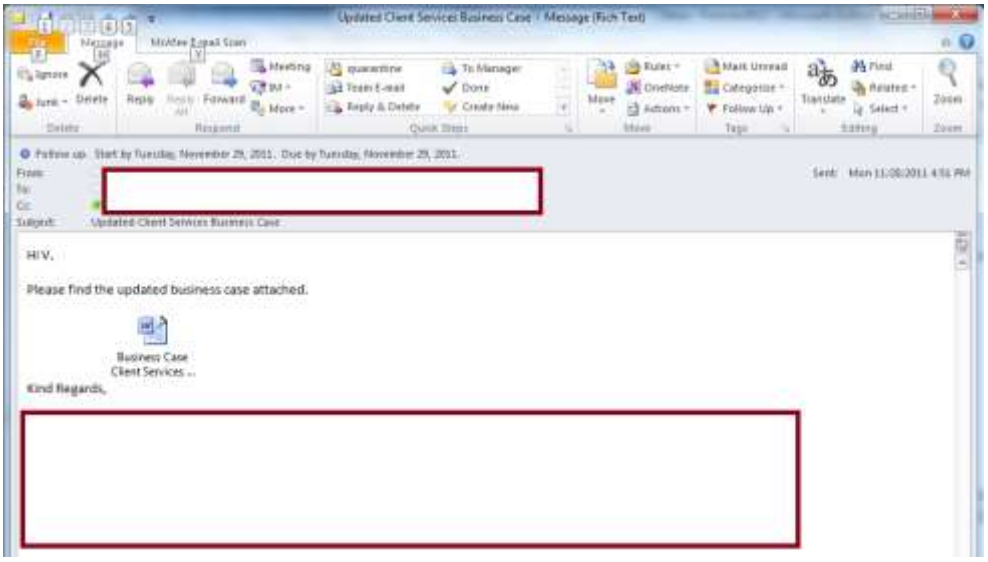
Appendix H: BPR Project Success/Failure Factors (La Rock, 2003)



Appendix I: Sample of Email Content

A set of sample emails were selected in order to provide a view of what content the emails generally contained. Note that any confidential information was masked, inclusive of names of people and organisational specific content which did not inform the research.

Sample 1: Email selected as it provides a view as to the initiation of Project 1 and when the first draft of the Business Case was issued. The attachment is also included.



Business Case for XXXXXXX

Confidential

Project Details

Project Name	XXXXXX				
Investment Theme	Revenue Generation		Revenue Defence		x
	Cost Reduction	x	Cost Avoidance		x
	Regulatory		Regulatory		
Originating Business Unit					
Supported Business Unit(s) and Stakeholders					
	Funding		Cost Centre		
Business Unit			11171		

Executive Summary

The most recent investigation into client satisfaction levels indicates an average of x client service we currently provide to UK client Services are at risk of retention, which equates to a potential loss of £xk in relative earnings to the amount of £xk/annum/month. Multiple client service models are currently utilized for servicing clients in different geographic locations, necessitating the design and implementation of a single Client Service Operating Model with the ability to increase a consistent service offering resulting in reduced headcount and cost to income ratios year on year.

* Audited results and detailed commencement for relevant metric in December 2016

- In order to rectify this situation an end-to-end analysis consisting of client query origination, processing and resolution will be undertaken with an aim to redesign and improve process capability across all Client Service areas including Cash, TPS, Trade Forex, Front and back office integration, Payments, Sales and Client services within the globally. This will contribute to the x other strategic objective in improving CB Operations.

The desired outcome of Process Standardisation and Optimisation will derive a **Net Present Value** (NPV) of £xk over 5 years and the payback period will be realized in Year x.

The proposed solution will include the following:

- Assessment of the current landscape across people, process, measurement and **Technology within the CB Client Services area when Includes Cash, TPS, Trade Forex, Front and back office integration, Payments, Sales and Client services
- Standardisation of processes
- To-be definition, design and implementation
- Alignment of roles and responsibilities, job descriptions and key People areas

The Programme is/was commenced in January 2012, Golive by/on/with 2012, with an estimated cost of £x

The processes approach for implementation will be as follows:

- Baseline and benchmark of As-is processes and metrics to be derived starting December 2011
- Analysis priority to be given to Corporate Client service processes, thereafter to other product service areas, including Are one or offices are International corporate client services are not analysed and improved
- A control cycle of x months starting January 2012 will be applied to ensure process maturity and process adherence.

* Audited results and detailed commencement for the year ended 31 December 2016

**Technology changes are not in scope but defined as enabler for the processes

Reasons

Problem

The most recent investigation into client satisfaction levels indicates an average of x clients/ services by the Client Services business are at risk of retention, a potential loss of £xk relative earnings to the amount of £xk/annum. Furthermore multiple client service models are currently utilized for servicing clients in different geographic locations, necessitating the design and implementation of a single [illegible] with the ability to increase a consistent service offering resulting in reduced headcount and cost to income ratios year on year.

** Audited results and detailed commencement for the year ended 31 December 2016

In the Group CB Client Services environment preliminary observations have shown that there are duplicate and ineffective processes leading to client dissatisfaction and sub-optimal productivity levels. For this purpose, a business case is being developed to establish a process driven design initiative, which will reduce or eliminate inconsistent service delivery to our clients, namely:

a. Multiple disparate service offerings across the CB in SA, International and Rest of Africa. as well as across product offerings (Rest-of-Africa includes cross product).
b. Unclear points of contact for Involvement Directories and Corporate Clients.
c. Disparate query processing and resolution across geographies.

Without standardized metrics and management information services a client service operation is impaired and unable to respond within agreed service level standards and process clients with required knowledge and timeliness. It is impossible to establish the demand for services and as such long wait times will greatly exacerbate client dissatisfaction.

Options Considered

This section further elaborates the various options that have been considered and the rationale for the chosen approach. This section may refer to Feasibility Studies or other efforts to validate the case validation as the case.

Option 1: Do Nothing

Description	In this option the process will not be explored to the opportunities. Business continues as per normal due to no process optimization or internal duplication.
Option Drawbacks	• no benefits realization • Staff cost increases year on year as new staff are recruited to cope with increasing volumes of client service queries • Cost to process queries will increase through inflation since query volume increase • no efforts will be made to defend market share, resulting in loss of revenue • Productivity levels will decrease year on year • Opportunity cost of improvements initiatives in the Client Services area through proper team involvement. • The Client Service business unit will absorb the following costs going forward: o An increase in staff costs assuming an average escalation of x% o An increase in processing costs of £x due to the increase in cost per query o [illegible] drivers at risk due to client defection or retention through the [illegible] review o A total loss for year 1 due to CB Client Services not maximizing on benefits equaling £x
Estimated Costs	No project costs will be incurred
Estimated Time	None, as it will remain business as usual

Option 2: Process Standardization and Optimization

Description	Within the Client Services area an end-to-end analysis consisting of Client Query Origination, Processing and Resolution will be undertaken with an aim to redesign and improve process capability across all Client Service areas including Cash, TPS, Trade, Forex, Front and back office integration, Payments, Sales and Client services within CB globally. This will contribute to the x% other strategic objective in improving CB Operations.
Option Benefits	• Net new hire staff costs, of £x from within year 1 • Improvement query processing costs £x from within year 1 • Revenue defence £x from within year 1
Estimation Costs	£x
Estimated Time	24 months

Chosen Option for This Project

Chosen Option	Project Standardisation and Optimisation
Details	• Will yield a Annualised NPV Present Value (NPV) of £ [redacted] for 4 years and the payback period will be realised in Year 1. • Is in accordance with the strategic objectives and current capabilities of the enterprise to facilitate an establishment of standardised client service offering. • Will result in quantitative cost reductions and will facilitate a strategy to ensure CSI is delivering for current revenue inflow.

Project Scope

	In-Scope
1	
2	Business process design and improvements, Level 4 to Level 5
3	Initial investment framework and key performance areas and indicators defined

	Out of Scope
1	PRS Client Contact Centre SA
2	Technology Impacted changes

Current Diagram

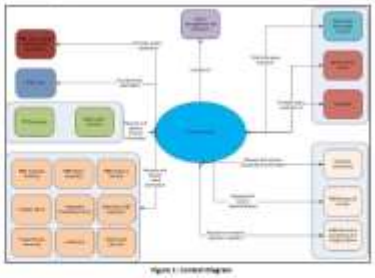


Figure 1 - Current Diagram

Stakeholder Matrix

The above matrix outlines the stakeholder identified within the CSI Client Services environment

Stakeholder Matrix						
Name	Business Area	Designation	Requirements	Processes	Training	Implementations
[redacted]		Director	✓	✓		✓
		Head	✓	✓	✓	✓
		Head	✓	✓	✓	✓
		Head	✓	✓	✓	✓
		Head	✓	✓	✓	✓
		Head	✓	✓	✓	✓
		Head	✓	✓	✓	✓

Business Requirements

	High Level Business Requirements
1	Implement and establish metrics for the entire client services environment to enable cycle time reduction and improving throughput
2	Enhancement of continuous improvement methodologies throughout the area
3	Investigate current functions, roles and responsibilities and provide recommendations
4	Investigate and design the standardisation of role and responsibilities across geographies, link to related metrics to enable continuous improvement such as CSI findings, the Voice of the Client (VOC), quality assurance, as well as time and motion studies
5	Investigate process and technology improvements with the added aim of improving client capability and client experience
6	Explore opportunities for lead generation within client services
7	Defined resource height positioning levels for CSI client services including process standardisation, internal engagement models, escalation definitions and Service Level Agreements (SLA) thus enabling an increase in throughput while reducing operating costs

Alignment to Strategic Objectives

	Strategic Objective	How will the Project Align?	Benefits
1	Reduce Cost	Lines of communications will be identified and interrogated in order to create a unified shared utility across the Group. This Project passes process and technology	
2	Increase throughput	Increase the ability for more and or optimal staffing levels by improving throughput and reducing cycle time	
3	Create standardisation	Creation of a shared utility across group	
4	Increase capacity	Creation of a shared utility across group	
5	Increase revenue	The reduction in cycle time to process queries and the reduction in queries themselves will increase revenue	

Constraints and Dependencies

- Valuation data is not reliably automated. Cumbersome technology and previous supporters differ from location to location currently no consolidated dashboard exists within the regions.
- Multiple regions and locations exist, thus leading complexity.
- The PRS Infrastructure supports functions within the CSI business areas and is the source for valuable information.
- There are current infrastructure recommendations that could possibly alter the current Client Services landscape where include a consolidated utility, initiative and the whole project sector who define a new operating model for partial processes (PSOs).

Critical Risks

	Risk Description	Mitigating Strategy	Proximity	Owner
1	Lack of consolidated data supporting client Services as a whole making it difficult to derive tangible insights.	Assumptions will be made based on current information and validation with business and Head of Finance.	Current	Project Team
2	Current client services landscape is under review and new strategies are being developed going forward including the [redacted] Business Units.	Be conscious of the strategies relating to regionalisation, make sure the process design is standardised to matter what model is used.	Current	Upstart
3	Availability of Business SME's and key resources to assist going forward.	To have an engagement model with the SME team and ensure main availability for project duration.	Current	Upstart
4	Misalignment between Business Architecture, IT and Infrastructure, IT and Product and Strategy.	Regular meetings with IT and strategy to ensure alignment.	Current	Upstart
5	Dependency between the urgency to move functions into utility and not having the inputs to Assist cross functional processes end to end.	An executive project board needs to be set up for decision making impacting on programmes.	Current	Executive Upstart

Benefits Expected

The below benefits were identified based on guidance data. Further analysis and the deployment of the consolidated metrics over year can realise further financial and non-financial benefits, which will be updated accordingly.

Financial Benefits	Expected Value	Target Date	Measurement
Flat rate for staff cost	£	22 November 2017	Cost reduced on an investment case on year of Work to continuous improvement
Improved Processing Costs	£	24 November 2017	
Revenue Defence	£	22 November 2017	
Summary of Financial Benefits			

Non-Financial Benefits	Indicator	Target Date	Measurement
Improves staff morale resulting in improved consistent customer service and an outbound experience	Performance	24 November 2022	5% score
Improved customer experience and retention to customer sensitivity - Consistent and improved level of service across product and services and impacting on realistic event groups and on rating.	KPI	24 November 2022	5% score
Standardisation of client service processes	Performance	22 November 2022	Optimisation
Ability to improve data on end, process on client specific needs decision making due to accurate data - Reduction in client service related complaints and escalations	Accurate metrics	22 November 2022	Business efficiency
Human Capital • Alignment of front-line skill to role • Creating the capability to develop cross training across product areas	Performance	22 November 2022	• Business efficiency • Profitability
Customer Value • Customised design to support operating model • Invoice and Reduce for changing business needs	Performance	22 November 2022	Business efficiency

Project Time and Cost

	Time	Time Tolerance	Cost	Cost Tolerance
Full Project	30 November 2022	2 Yr 12 Consol Acct to 10 December 2022		

Project Cost Breakdown

	Rate per Hour	Allocation	Number of FTE's	Total
Director				
Team Managers				
Analysts				
Data/Monitor				
PMO				
Technical Lead				
Change Management				

Training Office Hall	
Off Line Material	£
On-line Material	£
Travel	£

Investment Appraisal

The below table displays the cost/benefit analysis across 5 years:

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Project Costs						
Software Costs						
Support Costs						
Total Outflows						
Inflows (Benefits)						
Flat rate for staff cost						
Improved Processing Costs						
Revenue Defence						
Total Inflows						
Expected Outcome						
Risk Weighted						
Present Value						
Inflation Rate						
Cost of Capital						
Present Value NPV	£					
Expected Net Present Value	£					
Real Case NPV	£					
Payback Period						
IRR						
ROI						

Starting 2022 there will be a full rollout as shown in the table below. The total estimated saving will be £ 4,456,500.00 as shown below.

In terms of the calculations for the investment appraisal, calculations for IRR requires cash year therefore the ROI benefit calculations appear in each run, which assess the benefits for year 2.

	Rapid Improvement Items	Description
1.	Consumer Card IT process improvements	Obtain an understanding of how the organisation can improve quick resolution to customer on client through process optimisation
2.	Client service function alignment	Relocation of front and Middle client service functions into a best service

Rapid Improvement Items	2022
Flat rate for staff cost	£
Improved Processing Costs	£
Revenue Defence	£
Total Estimated IRR Saving	£

Key Investment Appraisal Notes and Assumptions

1. **Flat rate for staff cost**

Calculation figures are summarized in the table below:

Year 1	Reduced to 35%
Year 2	Reduced to 35%
Year 3	Reduced to 35%
Year 4	Reduced to 35%
Year 5	Reduced to 35%

The figures have been calculated on:

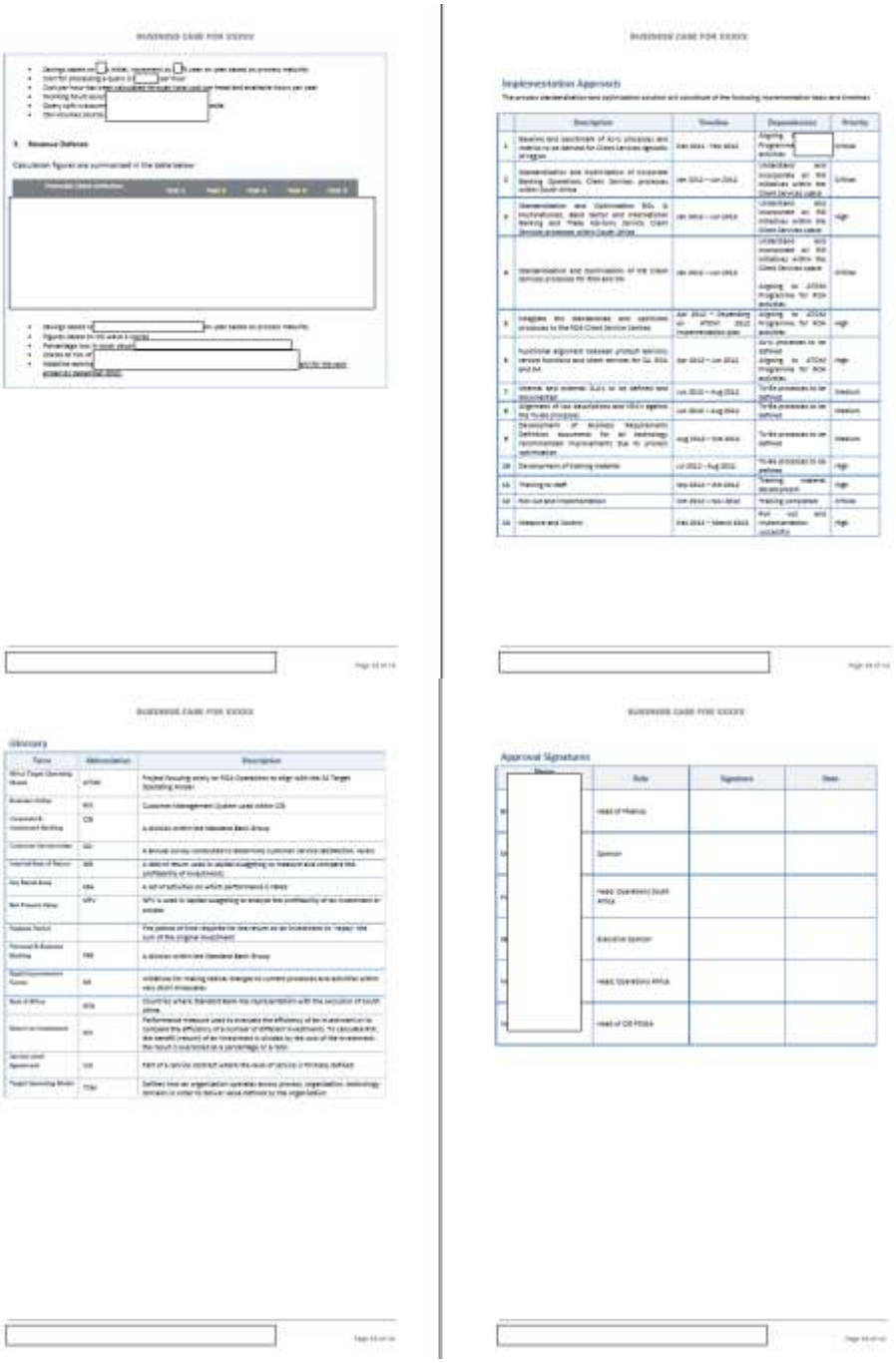
Description	
	Actual figure Total staff costs 2020
	Actual figure Total staff costs 2021
	Adjusted figure staff costs 2021
	Increase more over the past years
	5% of Adjusted figures 2021

- 2020 staff cost figures are assumed to be fixed their value
- 2022 staff cost figures are affected through the inflow of various areas through Project Synergy
- 2021 figures have been adjusted to allow for trend analysis as the Service Advisory team moved out of Client Services through functional alignment
- Staff cost increase have calculated on 5% year on year
- Savings based on 35% value, increment on 35% year on year based on previous maturity

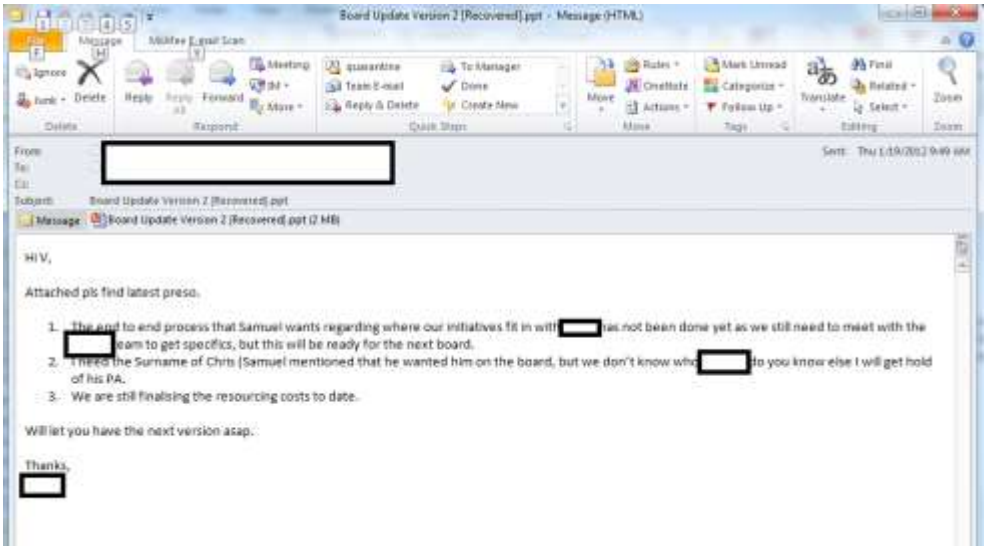
2. **Improved Processing Costs**

Calculation figures are summarized in the table below:

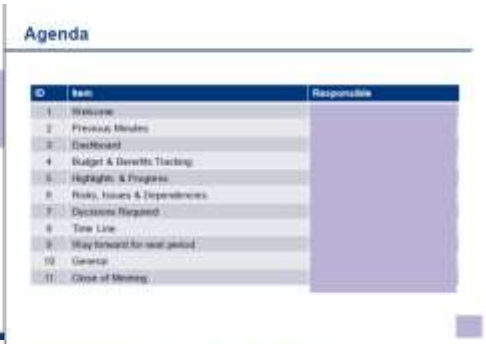
	Annual Increase of Invoice Lines %	Cost per Hour	Cost Incurred per Transaction	Saving
2021	151,427			
Year 1				
Year 2				
Year 3				
Year 4				
Year 5				

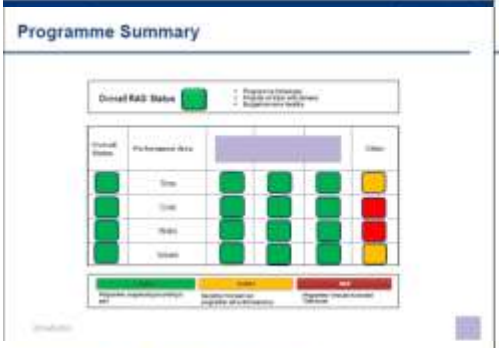


Sample 2: Email selected as it provides a view as to the Project Board Pack as an attachment. The attachment is also included.


Board Update Version 2 [Recovered].ppt - Message (HTML)
Subject: Board Update Version 2 [Recovered].ppt
Hi V,
Attached pls find latest preso.
1. The end to end process that Samuel wants regarding where our initiatives fit in with [redacted] has not been done yet as we still need to meet with the [redacted] team to get specifics, but this will be ready for the next board.
2. I need the Surname of Chris (Samuel mentioned that he wanted him on the board, but we don't know who [redacted] do you know else I will get hold of his PA.
3. We are still finalising the resourcing costs to date.
Will let you have the next version asap.
Thanks,


Programme Board Update


Agenda
ID
Item
Responsible


Programme Summary
Overall RAG Status


Project Team Structure
Project Board


Project Team Structure
Project Board


Project Team Structure
Project Board

Attendance

Programme Board Update

Name of Board Delegate	Responsibility	Total												
[illegible]	[illegible]	[illegible]												

Legend: Present, Apologies

Programme of Work

Change the Bank (Operations)

Programme	Scope	Business Imperative
	[illegible]	[illegible]
	[illegible]	[illegible]
	[illegible]	[illegible]

Programme of Work

Run the Bank

Programme	Scope	Type
[illegible]	TBC	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	

Roadmap

Project Financials - 2012.

Current Year Delivery

Programme	Budget	Resource Costs	Other Costs	Annual Contribution	Monthly Contribution
[illegible]		R	R		
Payments		R	R		
Total		R	R	TBC	TBC

* [illegible]

- Project Dashboard

Overall Project Status		Start Date	Original Planned End Date	Current Approved End Date	Forecasted End Date
		[illegible]	[illegible]	[illegible]	[illegible]

Description	Status	Tolerance	Associated Risk / Issue / Change & Remedial Action
Project Budget		[illegible]	None
Project Schedule		[illegible]	None

Date of Milestone	Next Significant Milestone
[illegible]	[illegible]
[illegible]	[illegible]

Green	Amber	Red
[illegible]	[illegible]	[illegible]

– Highlights and Completed Actions

Highlight and Actions
Business Case signed off
Commenced Current State Analysis
Commenced [illegible] Current State Analysis

- Project Dashboard

Overall Programme Status		Start Date	Original Planned End Date	Current Approved End Date	Forecasted End Date
		[illegible]	[illegible]	[illegible]	[illegible]

Description	Status	Tolerance	Associated Risk / Issue / Change & Remedial Action
Programme Budget		[illegible]	None
Programme Schedule		[illegible]	[illegible]

Date of Milestone	Next Significant Milestone
[illegible]	[illegible]
[illegible]	[illegible]

Green	Amber	Red
[illegible]	[illegible]	[illegible]

– Highlights and Completed Actions

Highlight and Actions
Business Case signed off
Commenced Current State Analysis
Commenced [illegible] Current State Analysis

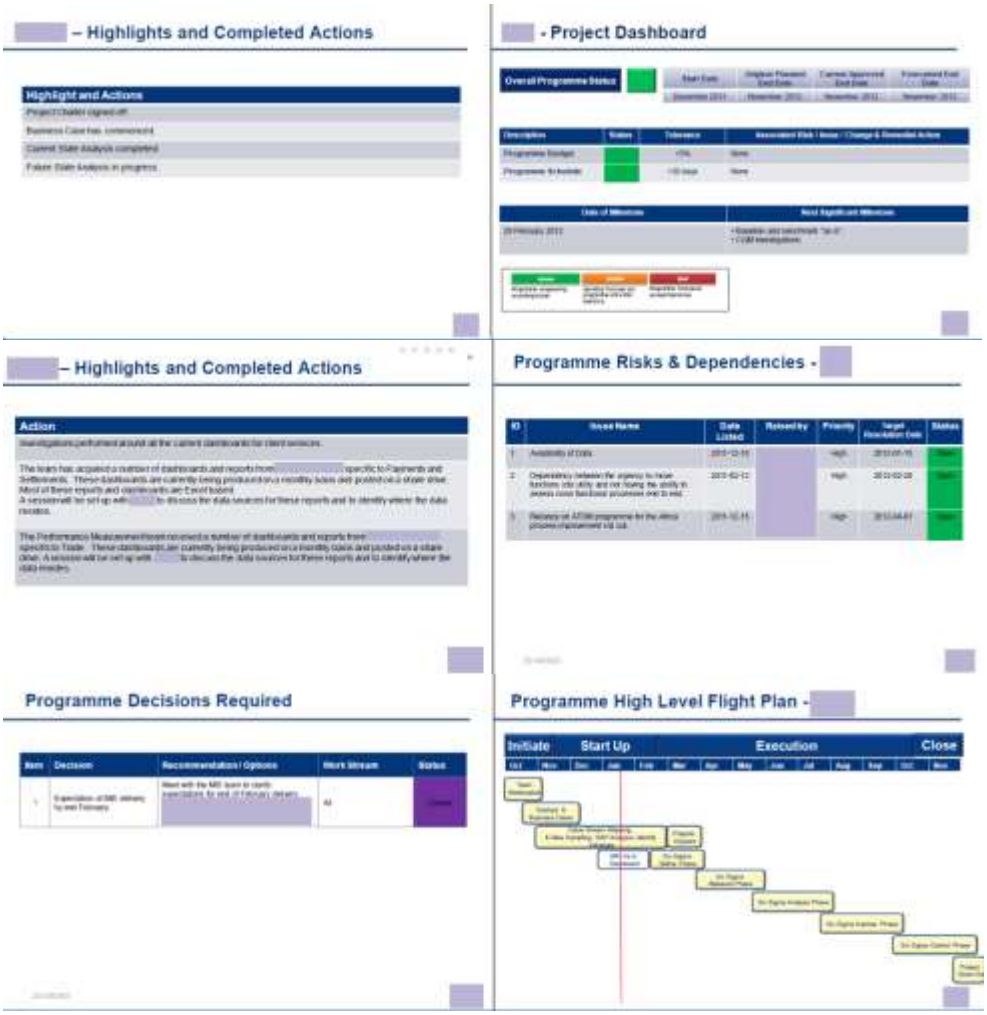
Processing - Project Dashboard

Overall Project Status		Start Date	Original Planned End Date	Current Approved End Date	Forecasted End Date
		[illegible]	TBC	TBC	TBC

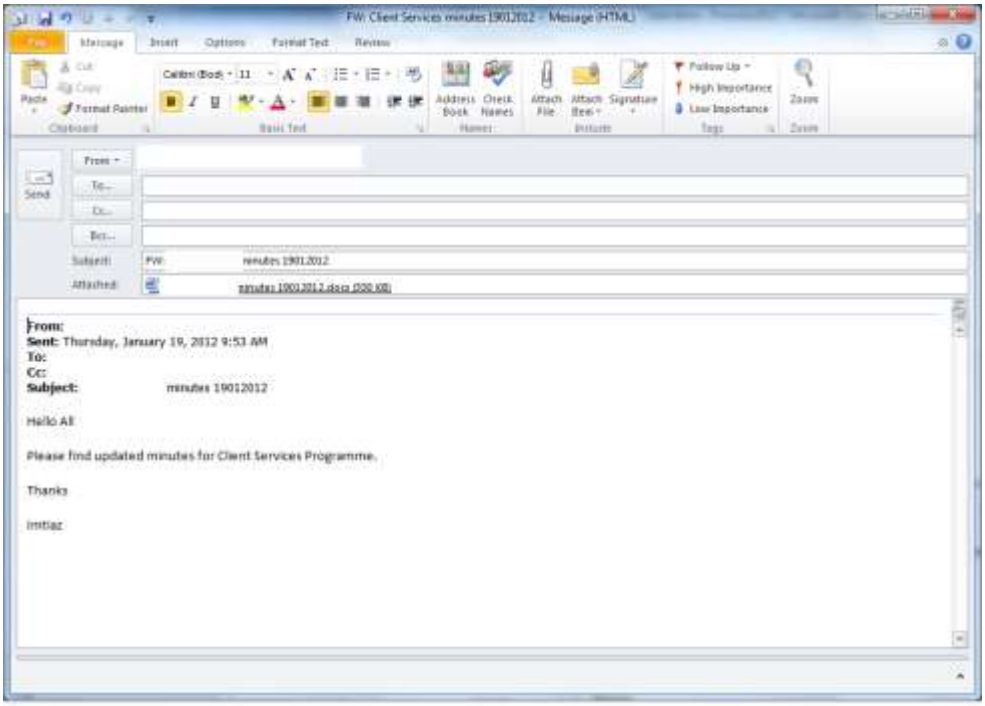
Description	Status	Tolerance	Associated Risk / Issue / Change & Remedial Action
Project Budget		[illegible]	None
Project Schedule		[illegible]	[illegible]

Date of Milestone	Next Significant Milestone
[illegible]	[illegible]

Green	Amber	Red
[illegible]	[illegible]	[illegible]



Sample 3: Email selected as it provides a view as to the format and content of the minutes that were taken for the projects. The attachment is also included.



[redacted]

Programme:	[redacted]
Date:	19 January 2012
Time:	9:00am – 10:30am
Venue:	[redacted] Street – Room 506

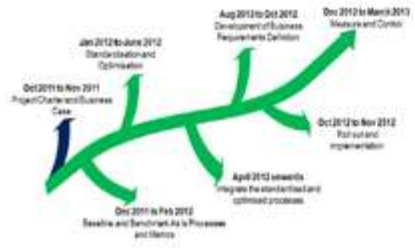
Attendance

[redacted]

Distribution

[redacted]

Roadmap

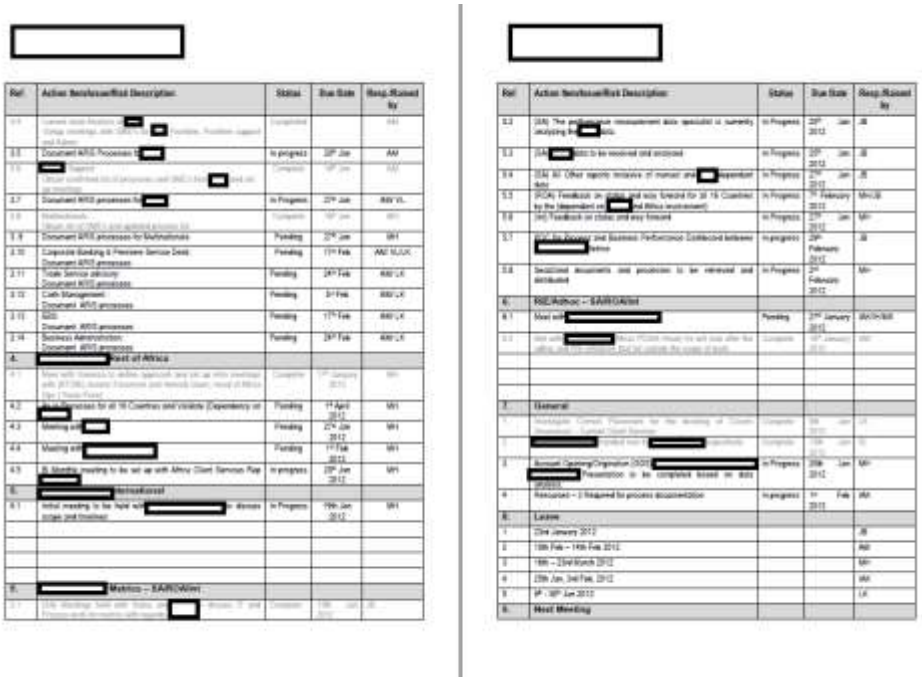


[redacted]

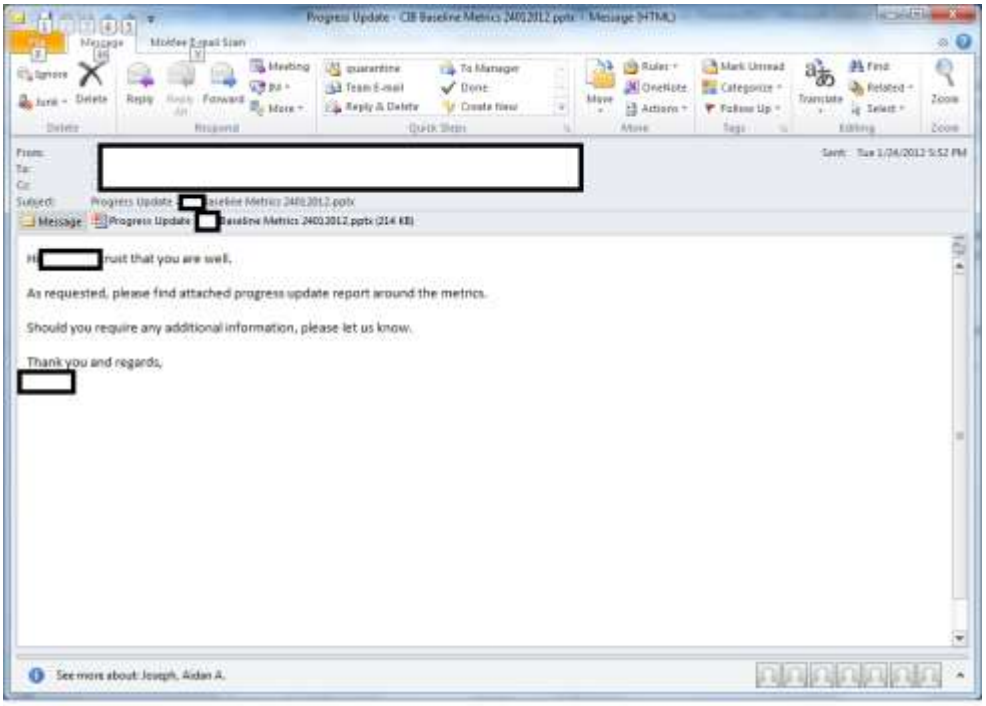
Project Scope

	In Scope
1	[redacted] South Africa, Point of Africa and International
2	The following identified business areas will be impacted and investigated: [redacted] Africa integration
3	Business process design and improvements: Level 3 to Level 5
4	[redacted] service delivery to Business Banking customers
5	Inter-business handovers and Key Performance Areas and Indicators (KPI&A)
6	Aligning with the following initiatives: [redacted] Implementation, Programme, Feasibility
	Out of Scope
1	[redacted]
2	Technology impacted changes is excluded, however recommendations will be provided for technology improvements if identified

Ref.	Action Item/Issue/Risk Description	Status	Due Date	Resp./Raised by
1.	Introductions			
1.1	Members of the group were welcomed	Noted	-	IM
2.	Purpose			
2.1	Updates on Task/Activity Progress	Noted	-	MS/IH
3.	[redacted] South Africa			
3.1	Information gathering - Methodologies	Complete	13/01/2012	MH
3.2	Walkthroughs + meetings with the SME from methodologies to assess the process	In Progress	20th Jan 2012	MH
3.3	Meet with [redacted] and confirm validate processes	In Progress	27 Feb 2012	AB/MH



Sample 4: Email selected as it provides a view as to the process analysis work that was carried out. The attachment is also included.



[redacted]

PERFORMANCE MEASUREMEN[redacted]

PROGRESS UPDATE [redacted]ASELINE METRICS – 24 JANUARY 2012

[redacted]

CONTENT

[redacted]

- [redacted]es
- [redacted]
- [redacted]nd Settlements
- [redacted]d

2014/03/10 [redacted]

[redacted] SERVICES

[redacted]

Business Area	Reports Identified	Measures
Corporate Banking OPS (Service Desk)	☐ CIS Stakeholder SupportDesk (SSD) Reports ☐ Daily, Weekly, Monthly MOS ☐ ClientServices KPI's ☐ CIS Call Statistics ☐ QA Reports	The measures currently identified across most of the various business areas: ☐ Volumes ☐ Values ☐ Turnaround Time ☐ Quality/Error Rate ☐ Productivity
Bank Sector and International Banking	☐ CIS Call Statistics ☐ Daily Weekly MOS ☐ ClientServices KPI's ☐ ISW Statistics ☐ OMAN Statistics	
Operations Support	☐ CIS Call Statistics ☐ Daily, Weekly SSS Report	
Business Online and Multinationals	☐ Daily, Weekly, Monthly MOS ☐ CIS Call Statistics ☐ ClientServices KPI's ☐ QA Reports ☐ ClientQuery Management(CQM) ☐ Skills Matrix	

2014/03/10 [redacted]

[redacted] SERVICES (CONTINUED)

[redacted]

Business Area	Reports Identified	Measures
Trade Advisory Services	☐ Trade Top 250 Clients ☐ Trade ClientBase ☐ CIS Call Statistics	
Africa	☐ CCC Weekly Report- Swaziland	

2014/03/10 [redacted]

[redacted]

[redacted]

Business Area	Reports Identified	Measures
Trade Processing	☐ CostCentre Losses ☐ IT Issues ☐ Trade Services Monthly Manco Report ☐ Service Breakdown Log ☐ Service Breakdown Report ☐ Guarantees	The measures currently identified across most of the various business areas: ☐ Volumes ☐ Values ☐ Turnaround Time ☐ Quality/Error Rate ☐ Productivity

2014/03/10 [redacted]

[redacted]TLEMENTS

[redacted]

Business Area	Reports Identified	Measures
ITT Payments (ZAR)	☐ ITTGetNextReport ☐ ITS Report ☐ WF0009 - Daily Processed Payments	The measures currently identified across most of the various business areas: ☐ Volumes ☐ Values ☐ Ageing Analysis ☐ TAT ☐ Percentage ☐ Process Efficiency ☐ Quality ☐ Error Rate
ITT Payments (FCCY)	☐ Daily Reports Actioned (4040, 4027, 4055, 4057, 4060, 940, 10454, 10009) ☐ Workflow CurrentITT Transactions ☐ Reports to manage workload	
OTT Payments	☐ Outward TT RFS Volumes ☐ CPC Outward TT Volumes ☐ OTT Released ☐ ICM Outward TT Volumes (Business Online)	
RTGS, LJPS, ZJPS	☐ Still awaiting sample of reports from business area	
IGS and High Care	☐ FT Stats – IGS ☐ CSTP RFS / CPC / HC Cap Volumes ☐ CPC Outward TT Volumes ☐ OTT Overridden Daily	

2014/03/10 [redacted]

[redacted]EMENTS (CONTINUED)

[redacted]

Business Area	Reports Identified	Measures
Across Payments and Settlements (Overall MIS Reporting)	☐ TPS Ops FX Volumes 2011 ☐ Forex – All-_Products YTD 2010 v 2011 ☐ SAD 500 Daily Summary ☐ TPS Ops FX Turnover 2011 ☐ SWIFT Doc Carriers Dashboard 2011 ☐ OTT Hourly Release – WF ☐ Monthly metrics for Inquiries ops control dashboard ☐ Transactional Processing Dashboard 2011	The measures currently identified across most of the various business areas: ☐ Volumes ☐ Values ☐ Ageing Analysis ☐ Turnaround Time ☐ Percentage ☐ Process Efficiency ☐ Quality/Error Rate

2014/03/10 [redacted]

REPORT DIMENSIONS

[redacted]

Investigations have revealed that most of the above measures would need to be split into the following generic dimensions where possible:

- Period
- Region
- Business Area
- Product
- Transaction Type
- User (Capturer / Released By / Authorised)
- Status (Overdue / Urgent / Current / Future)

2014/03/10 [redacted]

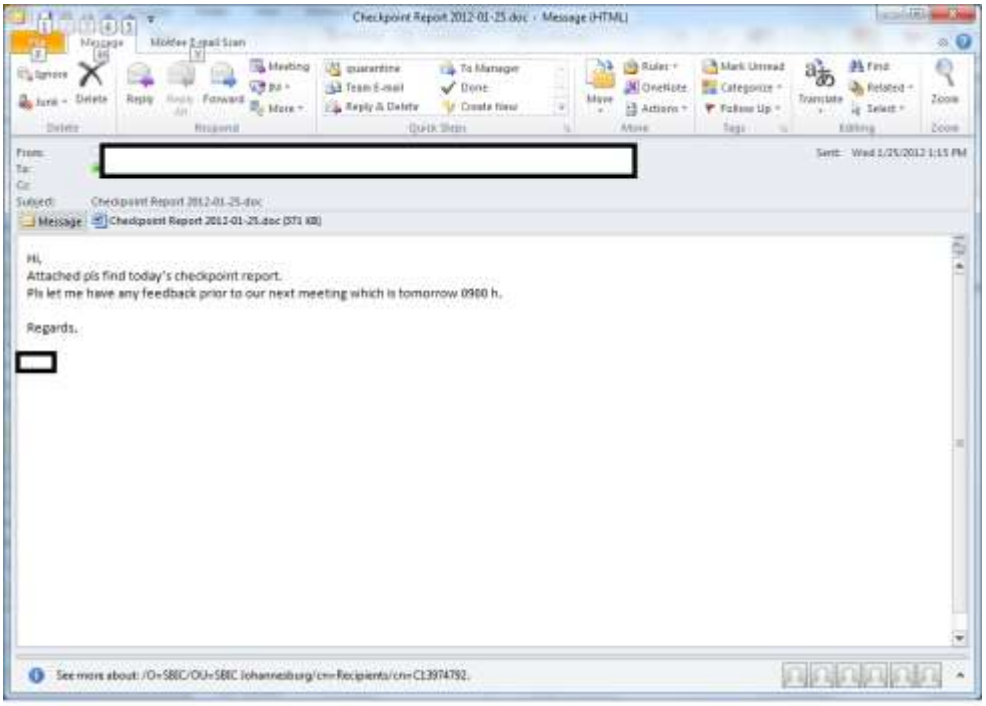
WAY FORWARD

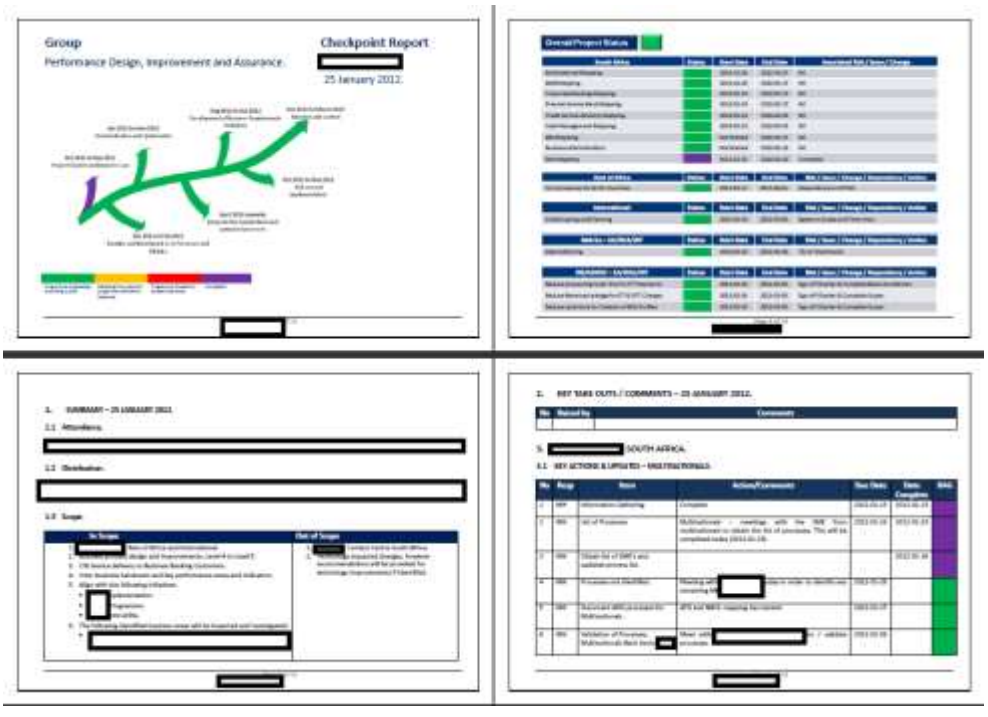
[redacted]

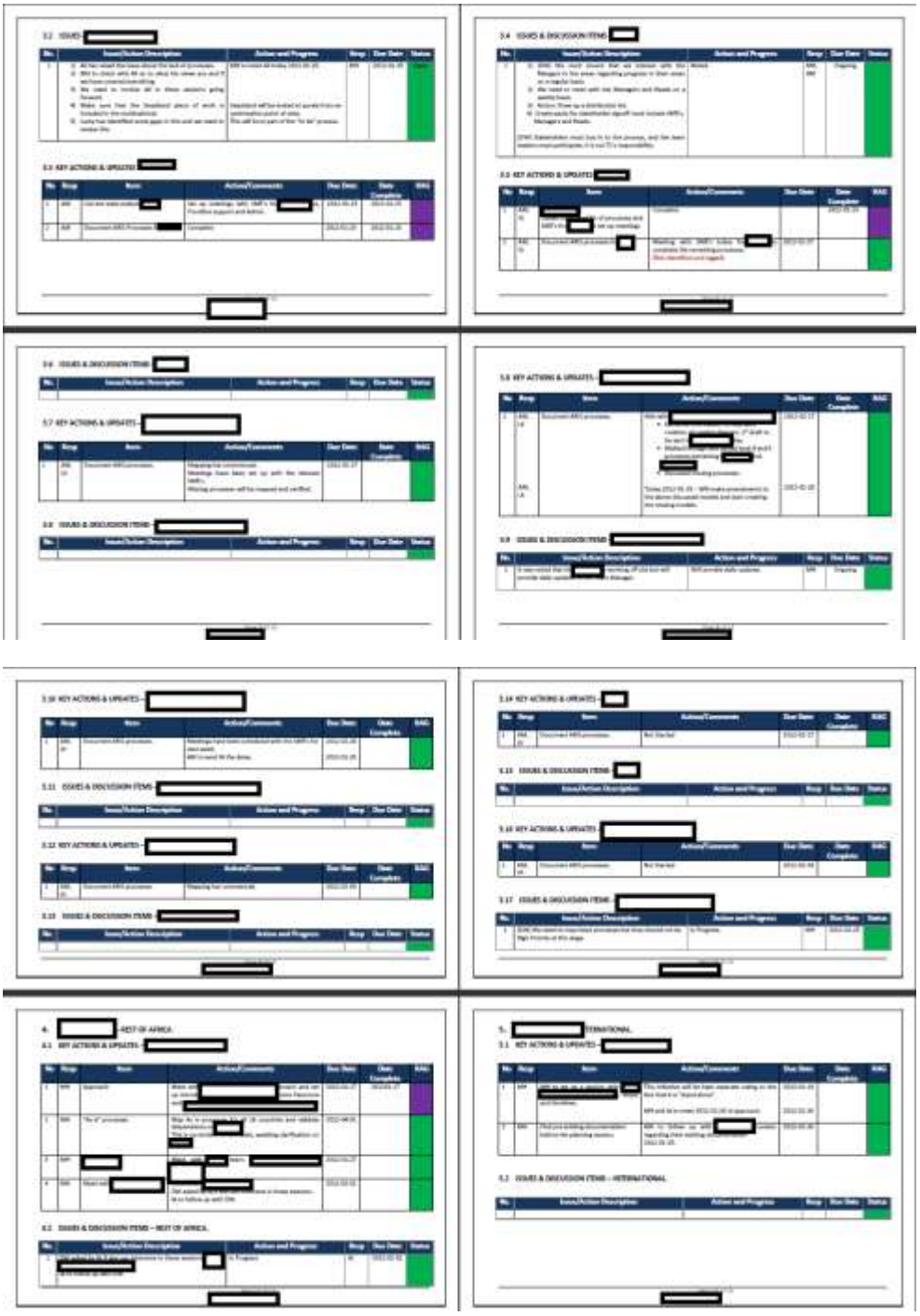
- Further engagements to continue with business partners to complete report requirement investigations
- Review and analyse all reports identified
- Identify all relevant data sources
- Engage data custodians to assist in granting access to the systems/data
- Discuss and align metrics with the process maps documented
- POC dashboard development using [redacted] will commence shortly

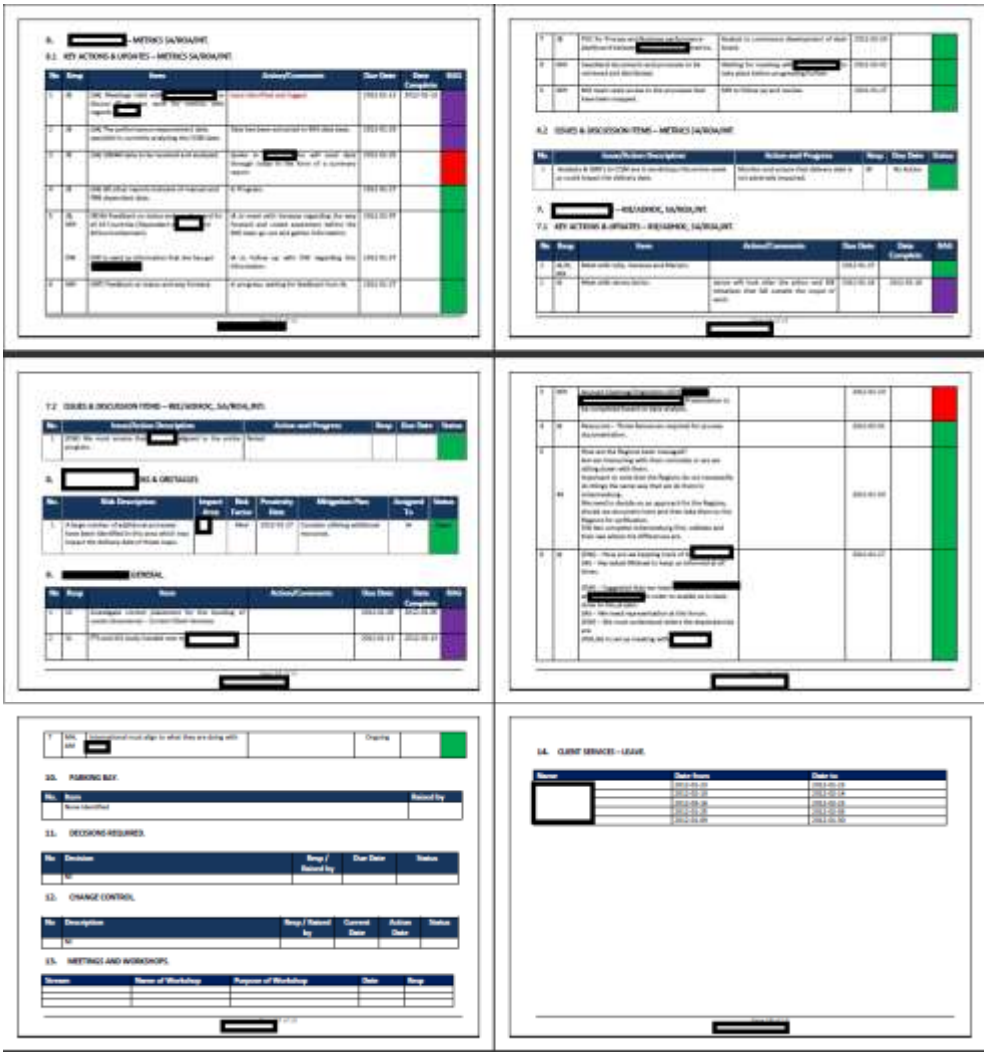
2014/03/10 [redacted]

Sample 5: Email selected as it provides a view on the format and content of the Process Design portfolio's project progress report. The attachment is also included.

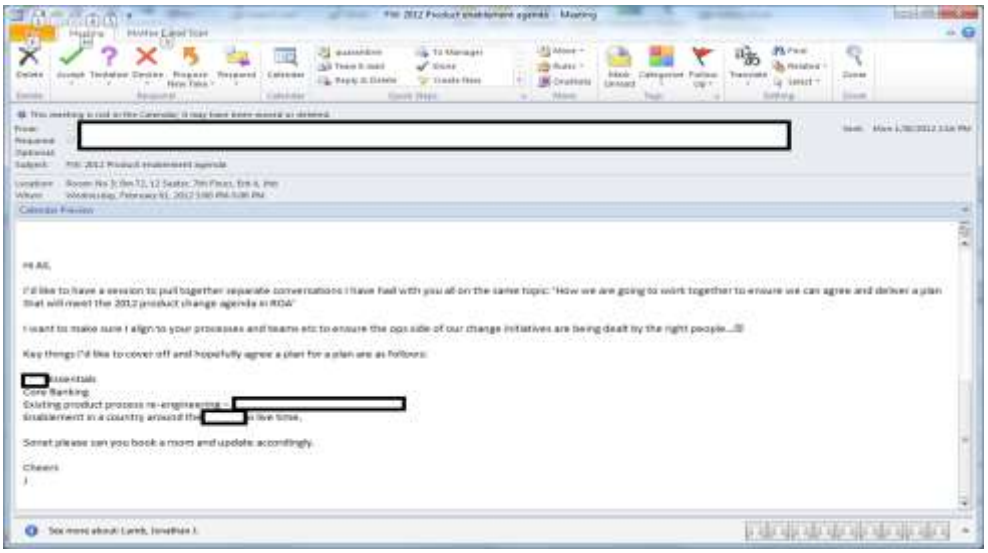




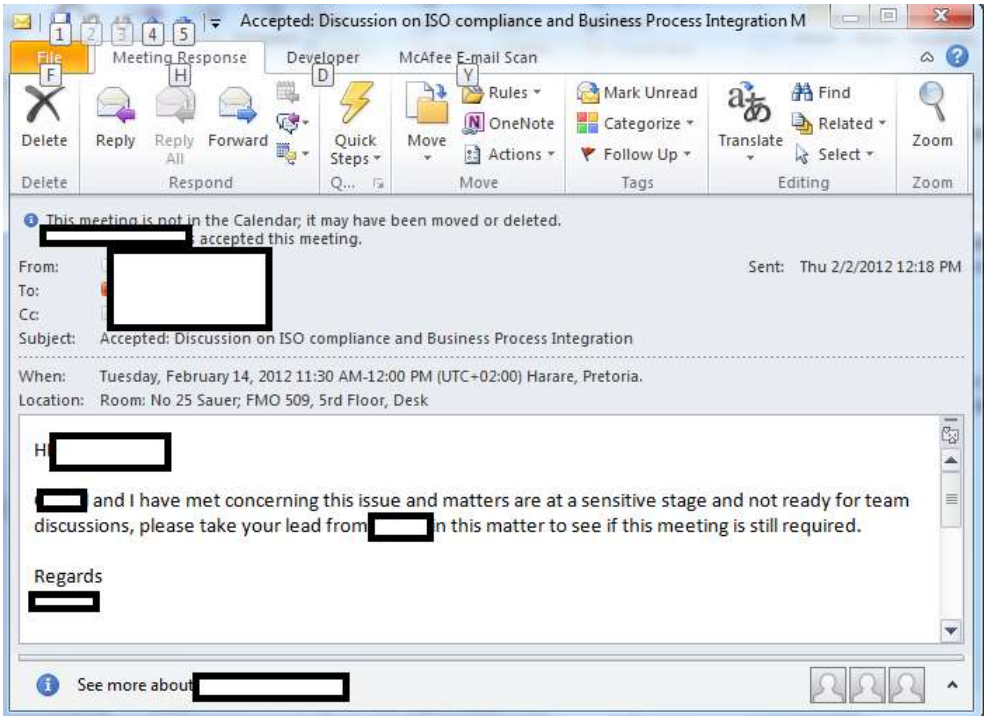




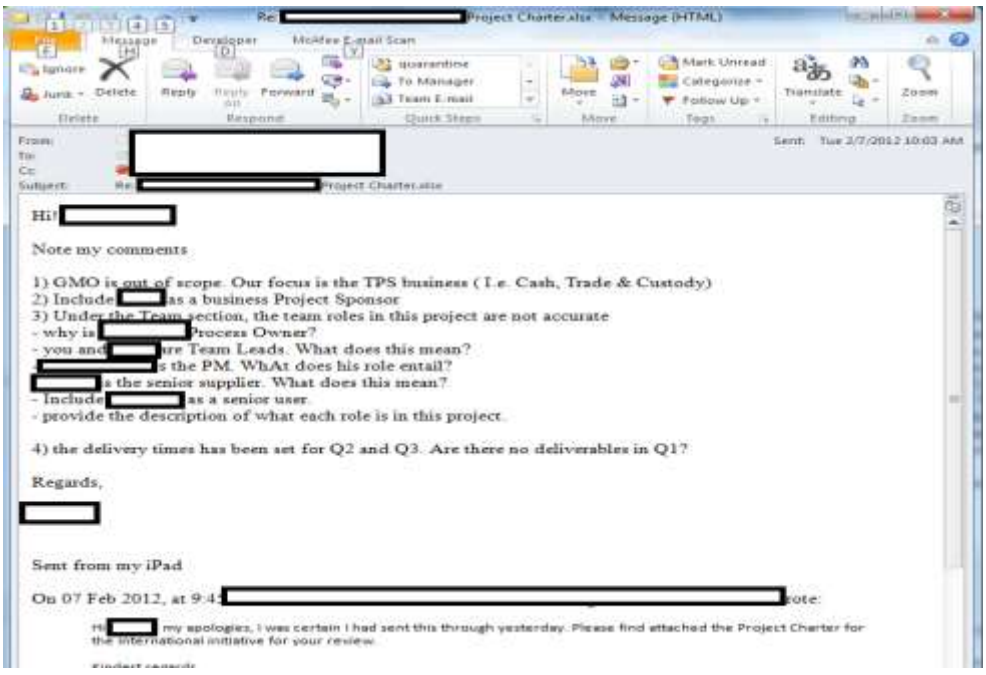
Sample 6: Email selected as it provides a view on the overlapping of work being performed by numerous executives aimed at the same objective. No attachment included.



Sample 7: Email selected as it provides a view on the disparate use of various Continuous Improvement methodologies within the same business unit. It also highlights the political environment within the business unit and organisation. No attachment included.



Sample 8: Email selected as it provides a view on the request from the existing sponsor of one of the BPR projects to appoint and add a new sponsor on the same project. The Project Charter for the project is attached as well.



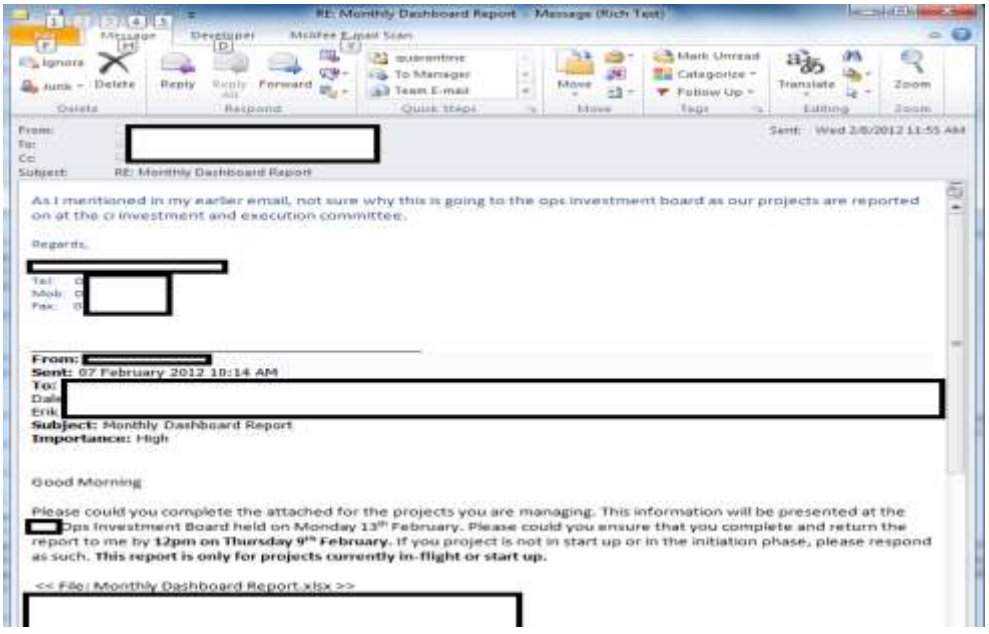
XXXXXXXX INTERNATIONAL PROJECT CHARTER

Purpose

Defines the parameters of the project
The charter, especially the scope, can be revised as the project progresses

[redacted] International Project Charter **Project:**	
Business case	*Opportunity statement*
The background to this project is to align with global strategy as well as to ensure that XXXXXXXs International are geared to cater for growth in the global and international landscape.	The current client services model in operation in London is not sufficiently scaleable in order to support the larger operational requirements as forecasted in a rapidly changing international landscape. Furthermore, no additional resources are to be allocated to XXXXXXXXX International, necessitating the move of utility type functions to the global utility. This is in line with the bank's global strategic decisions.
Goal statement	*Project scope*
To migrate identified functions out of [redacted]ional Hub to the South African [redacted]es hub **The variables** which influence the goals are: X1: Volumes of queries received X2: Resolution rates to queries received X3: SLA's met X4: Forecast increase in on-boarding of new customers **Outputs:** Y1: Service Levels to customers Y2: Current capability vs. forecast capability Y3: Aligned functions and roles Y4: To-be processes supporting the TOM	**Project starts:** Monday 06 February 2012 **Project ends:** Quarter 3, 2012 **In scope** [redacted]ices (Custody, Cash and Trade) [redacted]ices **Out of scope:** Development of new technology Continuous improvement of aligned processes (this will be included in the [redacted] Optimisation Programme)
Critical Success Factors	*Team*
The goals of the project are: **Q2:** Clearly articulate the Target Operating Model for CS International **Q3:** Implement the [redacted]ational TOM in alignment with Global strategy, maintaining current service levels **Q3:** Implementation of standardised business processes within International desk in South Africa **Q3:** Re-aligned functions and roles in order to support the TOM **The variables** which influence the goals are: Availability of key resources and data Lack of defined processes and instructions The ability of [redacted]South Africa areas to absorb and perform the functions identified for centralisation System constraints Growth in international markets	**Project sponsor** [redacted] South Africa) and [redacted] (London) **Process owner:** [redacted] **Team Lead:** [redacted] **Financial resource:** [redacted] **Stakeholders:** [redacted] **Project Manager:** [redacted] **Senior Supplier:** [redacted] **Senior User:** [redacted]

Sample 9: Email selected as it provides a view on the multiple levels of politics including that of various organisational boards trying to oversee the same projects.



RE: Monthly Dashboard Report - Message (Rich Text)

Subject: RE: Monthly Dashboard Report

As I mentioned in my earlier email, not sure why this is going to the ops investment board as our projects are reported on at the ci investment and execution committee.

Regards,

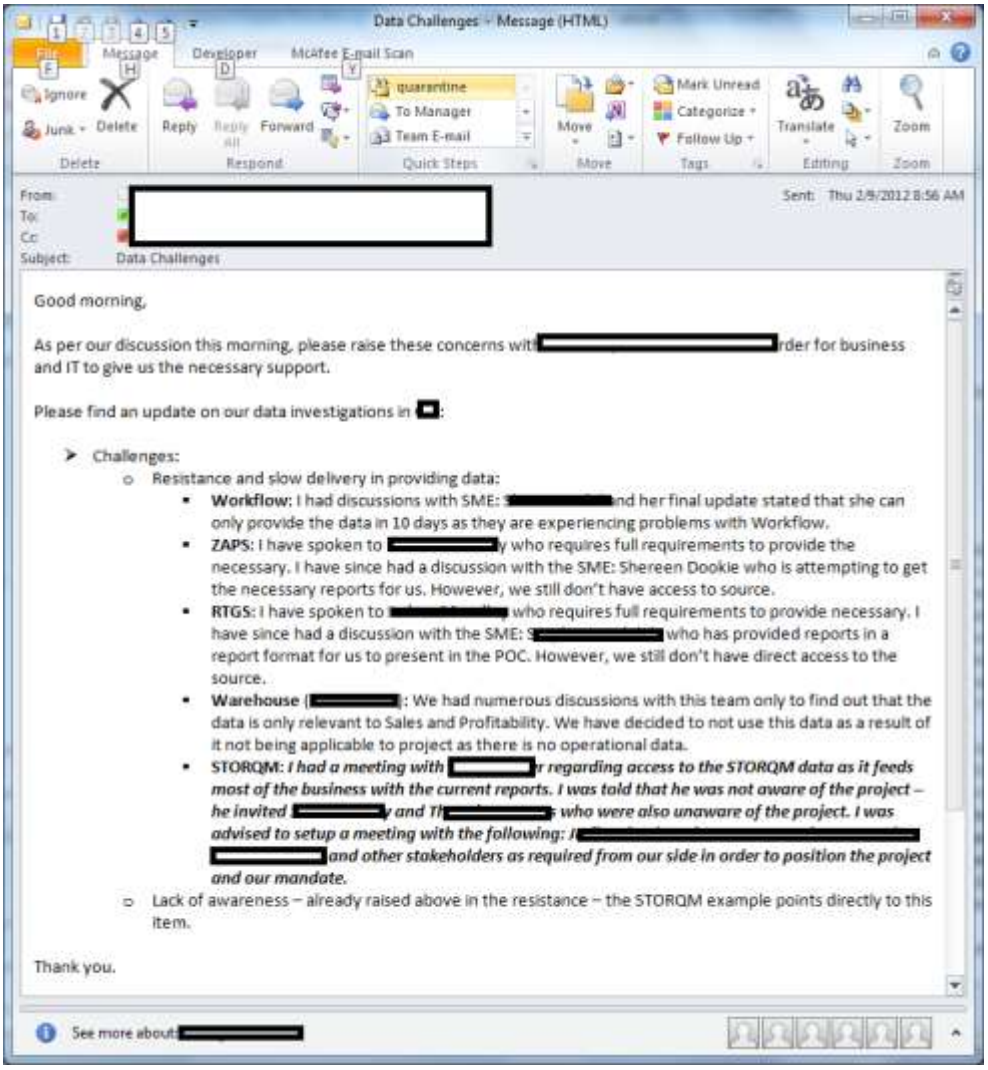
From: [redacted]
Sent: 07 February 2012 10:14 AM
To: [redacted]
Subject: Monthly Dashboard Report
Importance: High

Good Morning

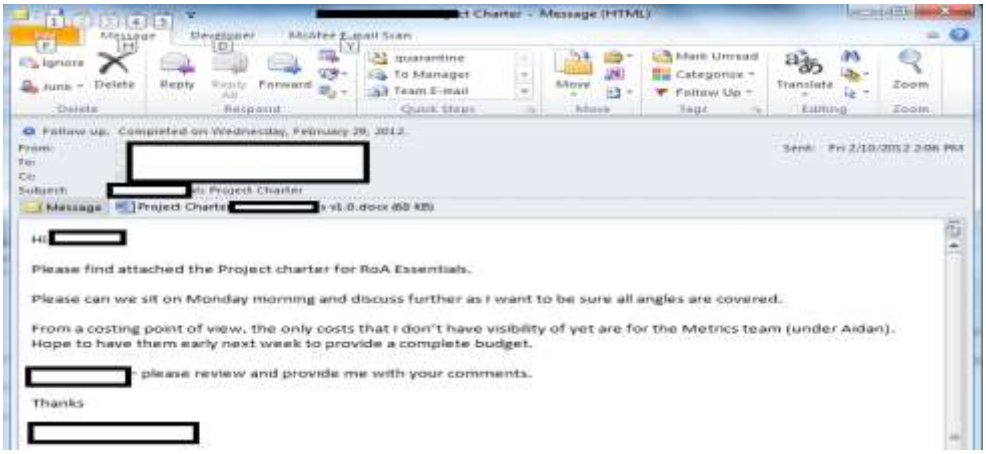
Please could you complete the attached for the projects you are managing. This information will be presented at the [redacted] Ops Investment Board held on Monday 13th February. Please could you ensure that you complete and return the report to me by **12pm on Thursday 9th February.** If you project is not in start up or in the initiation phase, please respond as such. **This report is only for projects currently in-flight or start up.**

<< File: Monthly Dashboard Report.xlsx >>

Sample 10: Email selected as it provides a view on the stakeholder resistance to change as well as the conflict between IT and CI Teams.



Sample 11: Email selected as it provides a sample view of the standard project charter. The attachment is also included.




Standard Bank

Project Charter

Initiative Details

Reasons


Preliminary Scope

Objectives

Alignment to Strategic Objectives

PROJECT CHARTER FOR [redacted]

	• Improve Scalability to meet revenue targets	
2	**Core Banking** • Ensure Business continuity	Through the analysis of the prioritised processes, it will be possible to understand and prioritise the Finacle Impact on Current Operating Model. The resultant aim being to determine an interim / future operating model.
3	**Project Rewire** • Address existing inefficiencies to reduce Operational Risk	Through the analysis of the prioritised processes, the detail behind burning issues will be unlocked to enable process improvement and efficiency improvement.

High Level Constraints and Dependencies

Dependencies

- [redacted]**ssentials**
  Technical dependencies include the RoA Roadmap and Finacle Rollout together with Channel Enablement
- **Core Banking**
  Finacle Rollout (including all peripheral development)
- **Project Rewire**
  System development to overcome manual workarounds
- **Other**
  Operational Risk Investigation currently underway
  Access to resources and logistics relating to travel to the target African countries
  Broader Operations change agenda (which includes ATOM and any other project)

Constraints

- Limited capacity from resources in country
- Risk and Compliance requirements
- Systems, Processes and Regulatory Controls outside of our control

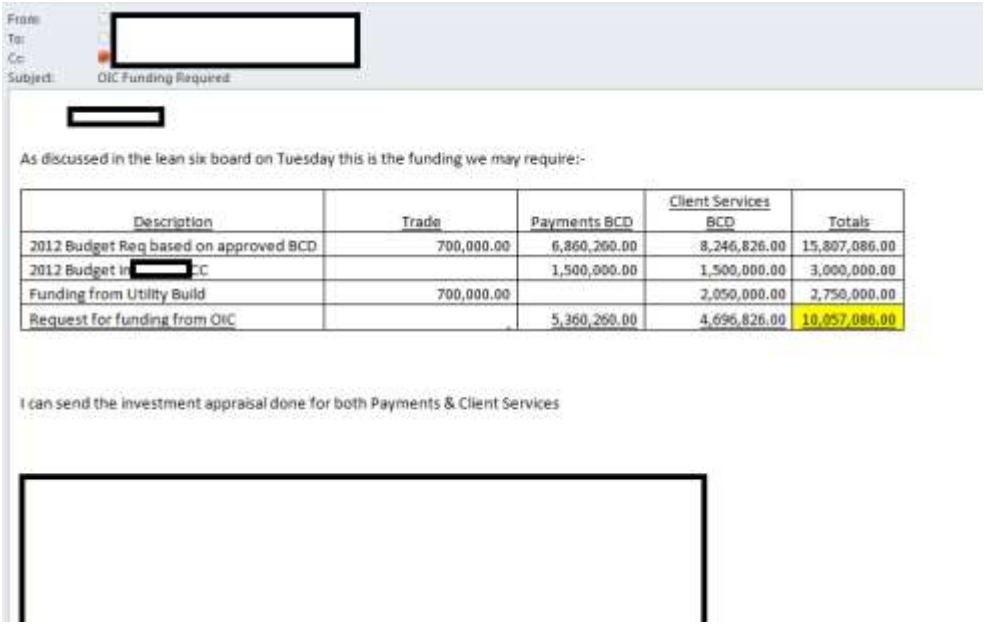
Critical Risks

	Risk Description	Mitigating Strategy	Proximity	Owner
1	Technology changes required resulting from As-Is/To-Be analysis	Ensure timeous feedback loop to IT to communicate potential changes resulting from process analysis	Current	Project Team
2	Single currency in East Africa (long term)	Impact Analysis to be performed at appropriate time	Long Term	Executive Sponsor
3	Understanding detail behind generic BankMaster model in each country	Communication approach to be put in place to facilitate best result without entering each country	Current	Project Team

Authorisation Signatures

Name	Role	Signature	Date
[redacted]	[redacted]		

Sample 12: Email selected as it provides a view on the unapproved budget statuses. This was 2 months after official work had been kicked off on several of the case study projects.



From: [redacted]
To:
Cc:
Subject: OIC Funding Required

[redacted]

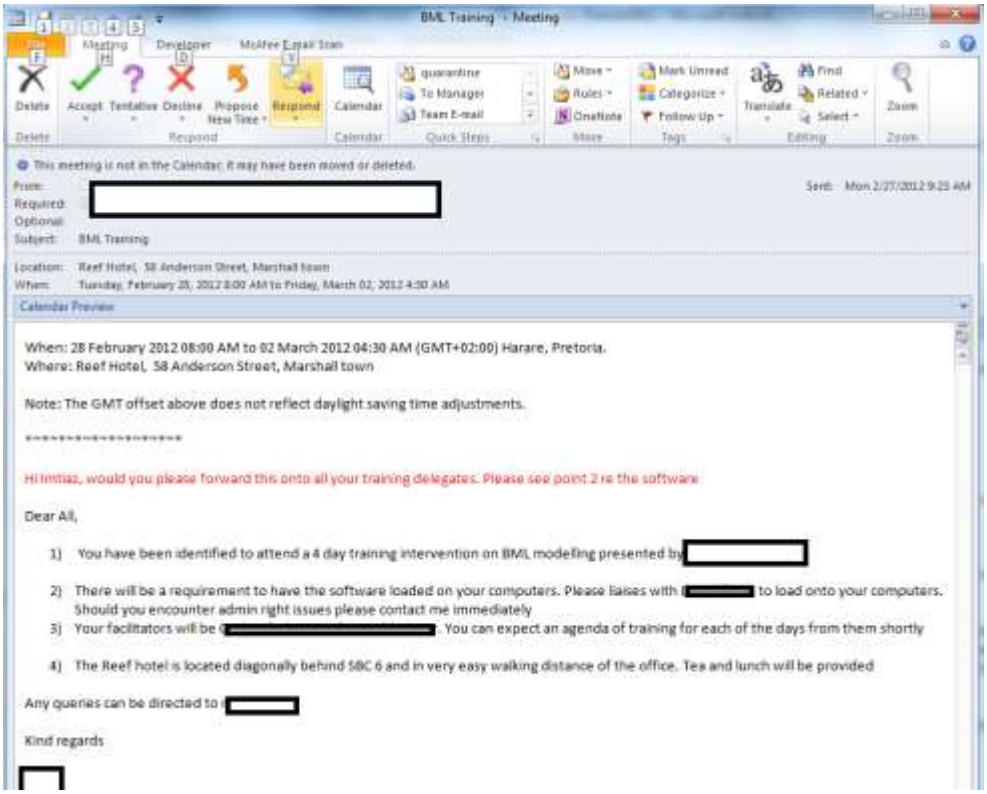
As discussed in the lean six board on Tuesday this is the funding we may require:-

Description	Trade	Payments BCD	Client Services BCD	Totals
2012 Budget Req based on approved BCD	700,000.00	6,860,260.00	8,246,826.00	15,807,086.00
2012 Budget in [redacted]CC		1,500,000.00	1,500,000.00	3,000,000.00
Funding from Utility Build	700,000.00		2,050,000.00	2,750,000.00
Request for funding from OIC		5,360,260.00	4,696,826.00	10,057,086.00

I can send the investment appraisal done for both Payments & Client Services

[redacted]

Sample 13: Email selected as it provides a view on the change of process analysis and design methodology. This was 2 months after official work had been kicked off on several of the case study projects.



BML Training - Meeting

Meeting | Developer | McAfee Email Scan

Delete | Accept | Tentative | Decline | Propose New Time | Respond | Calendar | quarantine | To Manager | Team E-mail | Move | Rules | OneNote | Mark Unread | Categorize | Follow Up | Translate | Find | Related | Select | Zoom

This meeting is not in the Calendar. It may have been moved or deleted.

From: [redacted]
Required:
Optional:
Subject: BML Training
Sent: Mon 2/27/2012 9:23 AM

Location: Reef Hotel, 58 Anderson Street, Marshall town
When: Tuesday, February 28, 2012 8:00 AM to Friday, March 02, 2012 4:30 AM

Calendar Preview

When: 28 February 2012 08:00 AM to 02 March 2012 04:30 AM (GMT+02:00) Harare, Pretoria.
Where: Reef Hotel, 58 Anderson Street, Marshall town

Note: The GMT offset above does not reflect daylight saving time adjustments.

****

Hi Imtiaz, would you please forward this onto all your training delegates. Please see point 2 re the software

Dear All,

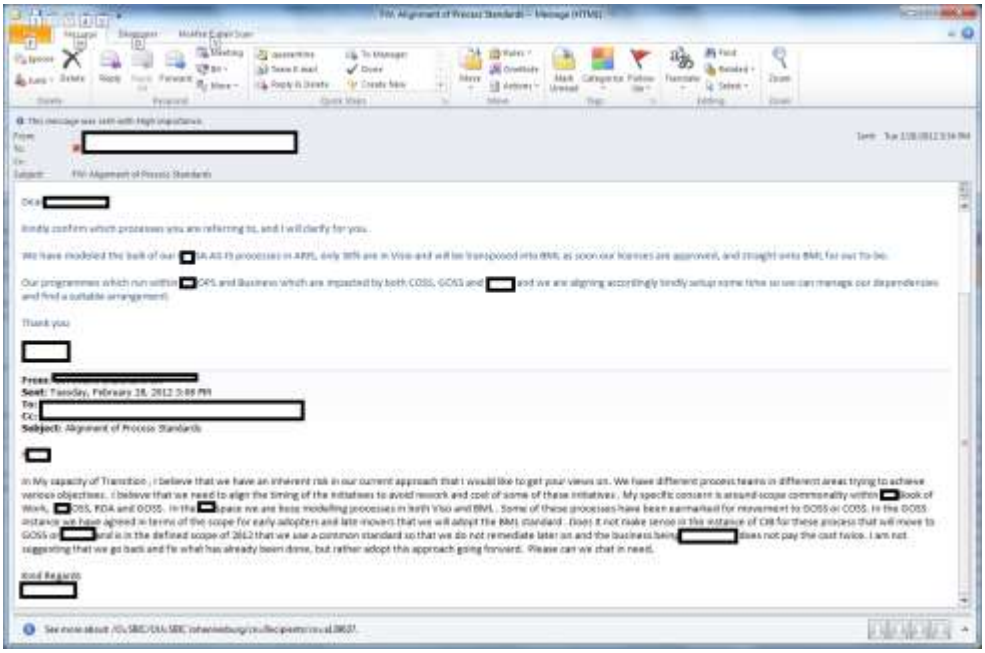
1) You have been identified to attend a 4 day training intervention on BML modelling presented by [redacted]
2) There will be a requirement to have the software loaded on your computers. Please liaises with [redacted] to load onto your computers. Should you encounter admin right issues please contact me immediately
3) Your facilitators will be [redacted]. You can expect an agenda of training for each of the days from them shortly
4) The Reef hotel is located diagonally behind SBC 6 and in very easy walking distance of the office. Tea and lunch will be provided

Any queries can be directed to [redacted]

Kind regards

[redacted]

Sample 14: Email selected as it provides a view on the risks being raised on the case study projects, which were being ignored by the cases study projects senior management. It also highlights the impact of business politics on project success.



Sample 15: A change in structure note sent out in an email. This highlights the fluidity of the organisations structure which had a major impact on the projects as sponsor's and stakeholders changed which resulted in an impact to scope, budget and priority.

[redacted]

2 March 2012

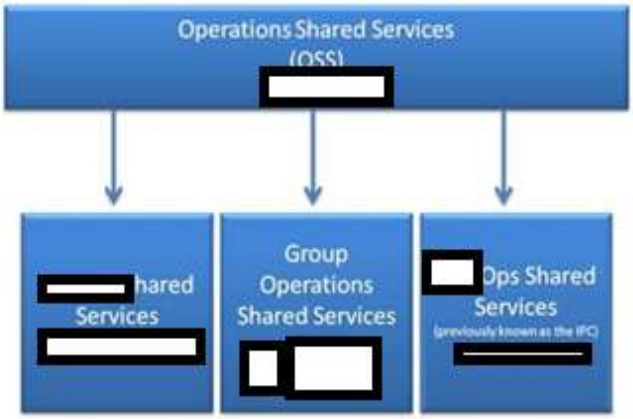
To: All One Ops staff

Dear colleagues,

By now you have probably heard about the new Operations Shared Services that we are building as part of the One Ops Target Operating Model. In this communication, I would like to give you an overview of what this programme is about and where it fits into the business strategy, as it forms a critical part of our One Ops strategic objectives.

What is Operations Shared Services (OSS)?
Operations Shared Services (previously called the Utility) was borne as a direct result of our One Ops Target Operating Model and is made up of 3 areas [redacted] **Shared Services** under [redacted], **PBB Shared Services** under Vinolan David (currently known as the IPC) and then a new area that will soon be created, also under Vinolan, called [redacted] **(GOSS)**. The latter segment will comprise functions that are common to both [redacted] that will be brought together and housed in this area.

Essentially, this is what OSS will consist of:

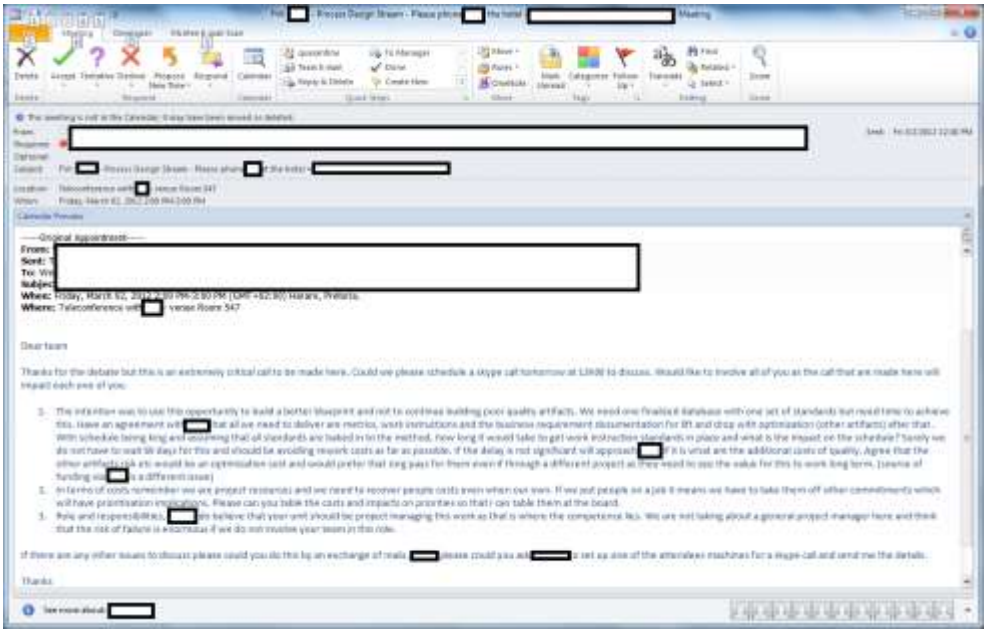


I am very pleased to announce that the 'build' of the OSS has commenced and over the next few weeks we will share some more information with you on this topic.

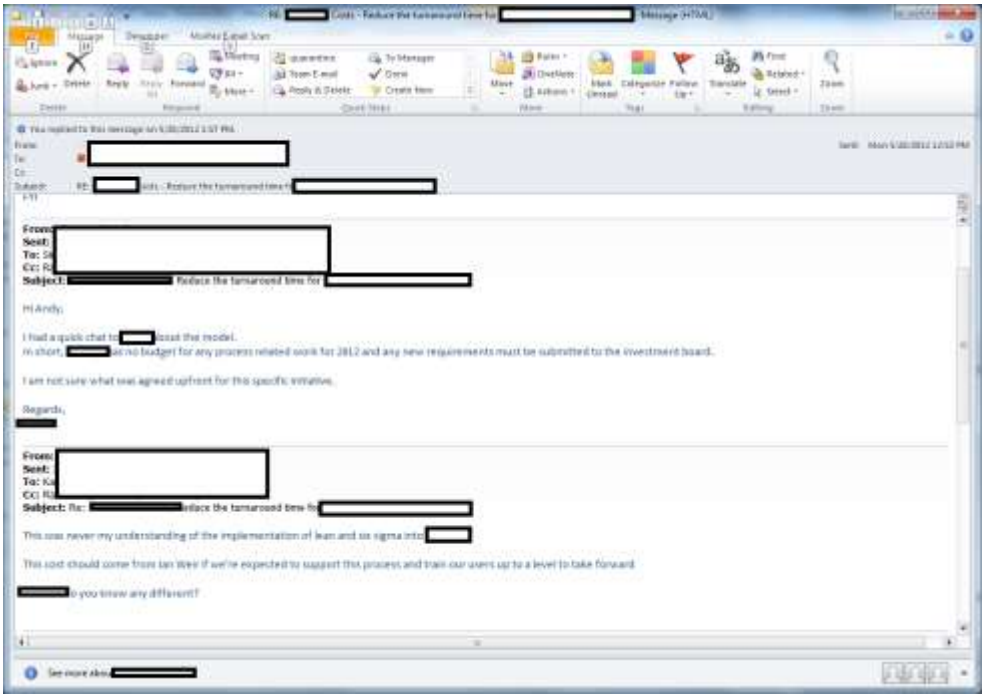
Goodbye "Utility/IPC, hello "OSS"
The identity of the Utility as we know it has changed. With the inclusion of teams and functions from across the business such as functions from RoA a[redacted]s, it is only right that we acknowledge the shift in identity for this unit – therefore, the Utility will now be known as Operations Shared Services. This new area will hold many career and development opportunities for staff and promises to be one of the most exciting places to be in future.

What will happen next?
In a recent communication, you will have seen that a section of the [redacted] am has commenced

Sample 16: Email selected as it provides a view on the issues experienced by the project teams regarding project funding due to the structural changes. This was sent out almost 3 months after work was initiated on some of the projects within the cases study.



Sample 17: Email selected as it provides a view on the budget discussions after the organisation restructured.



Sample 18: Email selected as it provides a detailed view on the business politics impact on the projects that formed part of the case study. It also highlights the difference of opinion at project sponsorship level with line management especially that between IT and CI type initiatives.

As stated to XX this is purely a first draft. I expect that there will be changes and we will incorporate them. This is a process which we both committed to so lets progress it. I have a number of questions I would like to cover with you when we meet

1. Please can you provide me with a copy of your stats your stats on capacity vs volume over the last 6 months. Hear you that spikes happen on mid and end of month. The further questions that I have are
2. Performance
    a. What is the SLA you have with business?
    b. What is the budget and FTE's in the area?
3. Capacity
    a. What is your forecast accuracy at the moment?
    b. How many FTE's are you short over mid and end of month?
    c. What will your plans on improving labour flexibility give you in terms of additional capacity during the peak periods?
4. Error rates
    a. What is the source of the error rates?
    b. Are errors measured? Do you agree with XX numbers on errors and other numbers?
        i. What volume is lost through rework?
        ii. What percentage of errors are induced by the customer and what is attributable to the consultants on the floor?
        iii. Are these errors related to the peaks and troughs during the month?
        iv. If attributable to the consultants on the floor do we know which consultants are making the errors and why?
        v. Are skills assessed and do the consultants have specific remedial training?
        vi. What training is available?
        vii. Are there performance contracts in place and are the consultants measured and rewarded on performance?
5. Productivity
    a. What are the targets (team and individual) and how are they cascaded to the floor?
    b. Is productivity measured (Volume/hour) what is the variance between the consultants and why? Is feedback provided to the consultants how often
    c. Has a climate survey been done and what are the results? When is the last time that management held a focus group with staff?
    d. What is the pattern i.e. timing of absenteeism mid month vs month end?
    e. What production is lost due to absenteeism?

XX lets work through this. My personal view is that we need to do further work on the problem statement and on the data. I do not want to get into solutioning at this stage. I also believe there is an overreliance on IT am also not saying that process will solve the issue. I also cant discount process at this stage. Have seen many cases that performance has improved 20-30% on the same platform without any IT changes. I can honestly state that in the CI projects we have in most instances we have achieved results without any major systems interventions by focusing on measurement and management practices. Equally you may be right that this is

culture – which goes to purpose, leadership, goals, behaviour, selection, teams, metric, communication. We have a far better chance if we solve the right problem in the right way.

See you next week

Hi
There are a number of inaccuracies and incorrect assumptions in the first draft.

1) Reference to the demand not being understood. The demand curve is very clearly understood, tracked and monitored on a daily basis. The business case cannot work on the assumption of processing averages per month, it needs to take the peaks and troughs into considerations, as on about 15 days of the month, supply meets demand and there are no issues, It is precisely the peaks that are causing problems

Please can you provide this data to XX

2) Very little further scaleability can be achieved in this environment, due to Excon. As I have explained on many occasions, current Excon rulings require manual intervention for each payment. Therefor, no scaleability, the more volume, the more hands required.
3) I have also explained in detail before that all system enhancements that can give some level of automation, has already been on the radar but IT delivery rate is very poor. Therefor, we cannot refer to any scaleability being achieved in this business case, since none of this has been realized in the last 2 years by IT and including it in this business case, will not change IT's delivery rate.
4) Other initiatives in collaboration with external clients are under way to improve the process which is outside of the scope of this exercise
5) You need to understand that a number of people at senior and executive levels (past and present) have consulted with many payments experts and tried to solve this problem over the last 3-5 years, by looking at the actual technical process of how the payments are processed and how to improve it. A pair of fresh eyes can certainly add some value, but we are **not** looking for this initiative to re-invent the wheel on all past efforts. A comprehensive list of IT enhancements and process improvements that can add noticeable value has already been raised over the last few years with IT and is already included in the ITAPS programme.

XX, my perception is that these numbers have been put together rather hastily without understanding the real problem statement.
The very real opportunity for me is to focus on the absenteeism (something that has not received a concerted and focused effort in the past). We can only achieve that by initiating a culture change, which probably starts more with a full scale training of team leaders and managers. If we use continuous improvement as a lever to achieve the culture change we need to be very mindful that staff can raise as many enhancements a day as they want, if there is a technology dependency, then they will not see the delivery of that for months, quite demoralizing. This initiative needs to be adapted accordingly.
Ian, we spoke about initiatives such as job profiling and focusing on ensuring we employ staff with a fitting attitude for this environment, etc.

Keen to move on this quickly, but can we pls get together soon to get onto the same page once and for all so that this process can kick off in the right direction in order to achieve maximum benefit. We cannot continue to miss each other like this.

Thanks
XX

Not sure where the numbers come from. I thought that we would use is opportunity to quantify the problem statement from which we can derive appropriate business cases?

XX - this is contrary to what we discussed.

Rgds,
XX

On 09 Apr 2012, at 19:32, "XX"

Dear XX,

XX Shared with us the problem statement you both compiled.

Herewith a brief presentation the team have compiled that aligns.

As I am away the next two weeks kindly liaise with XX should you have any questions that can't be addressed via email

XX

----- Original Message -----

XX - as discussed on Friday, here is an attempt at a problem statement to allow the CI team some time to validate and present opportunities. Please let me know whether you agree with the intro and the SA indicators. I'd appreciate some of your words here to match the reality on the ground. If you are happy, I'll run this by XX.

Here goes...

The payments processing departments of XX Operations is unable to process a high percentage of customer payment instructions within the parameters set by the customer (value date, currency and amount). It is evident that over month ends and during critical periods during the year, backlogs are created which requires significant overtime and management focus.

In the pursuit to keep costs flat for the 3rd successive year whilst absorbing volume increases and inflation, the inability to process increased volumes without the direct increase in capacity is a single hurdle to that objective.

The following are the indicators from the regions in support of the above problem statement:

XX
Daily and monthly unprocessed transactions leading to backlogs High levels of overtime to address backlogs Delayed benefit to customers High level of losses

incurred due to delay in processing High level of customer queries High level of management intervention to address backlogs and customer concerns

XX
Delayed benefit to customers
Inability to meet expectations set by Product

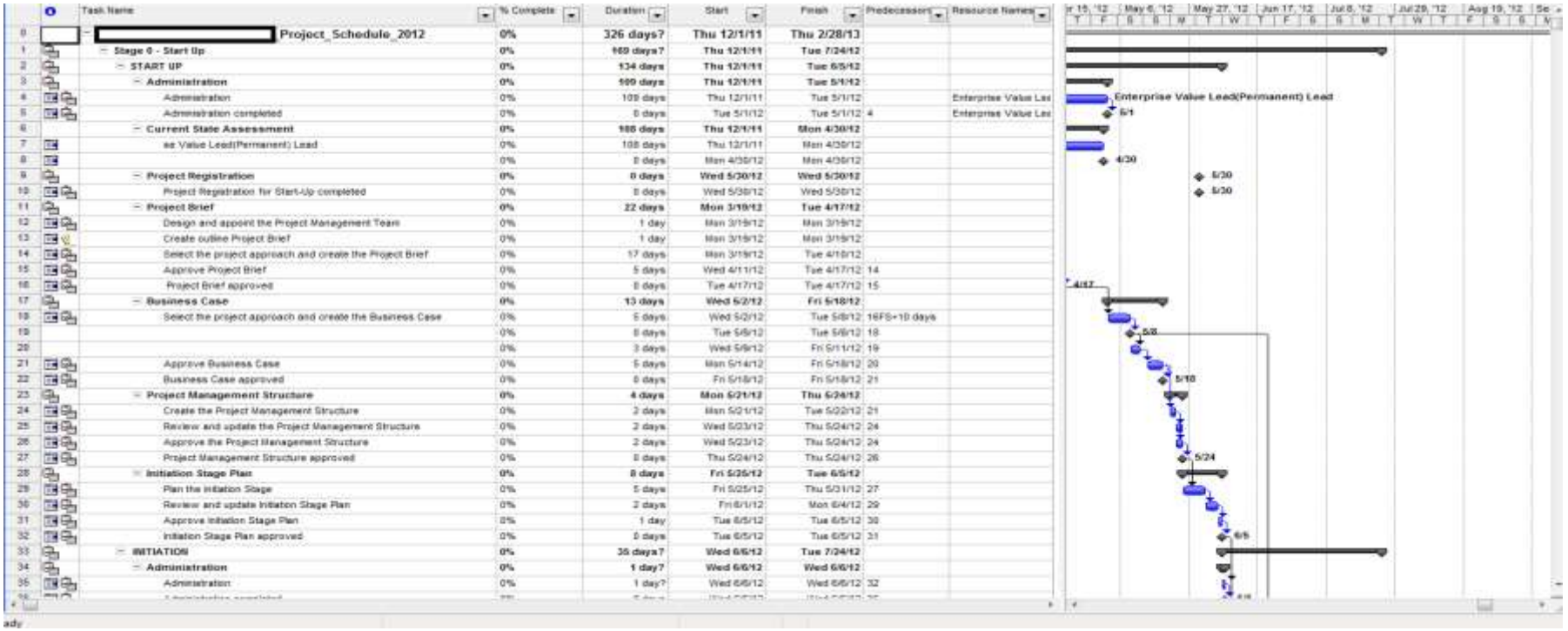
XX
High error rate per volume of transactions processed High level of customer queries

Due to insufficient data analysis it is proposed that the CI team focuses on the qualification and quantification of the problem statement above and to provide clear opportunities to reduce the indicators listed above. The intention is to allow the team to present on these opportunities in one month.

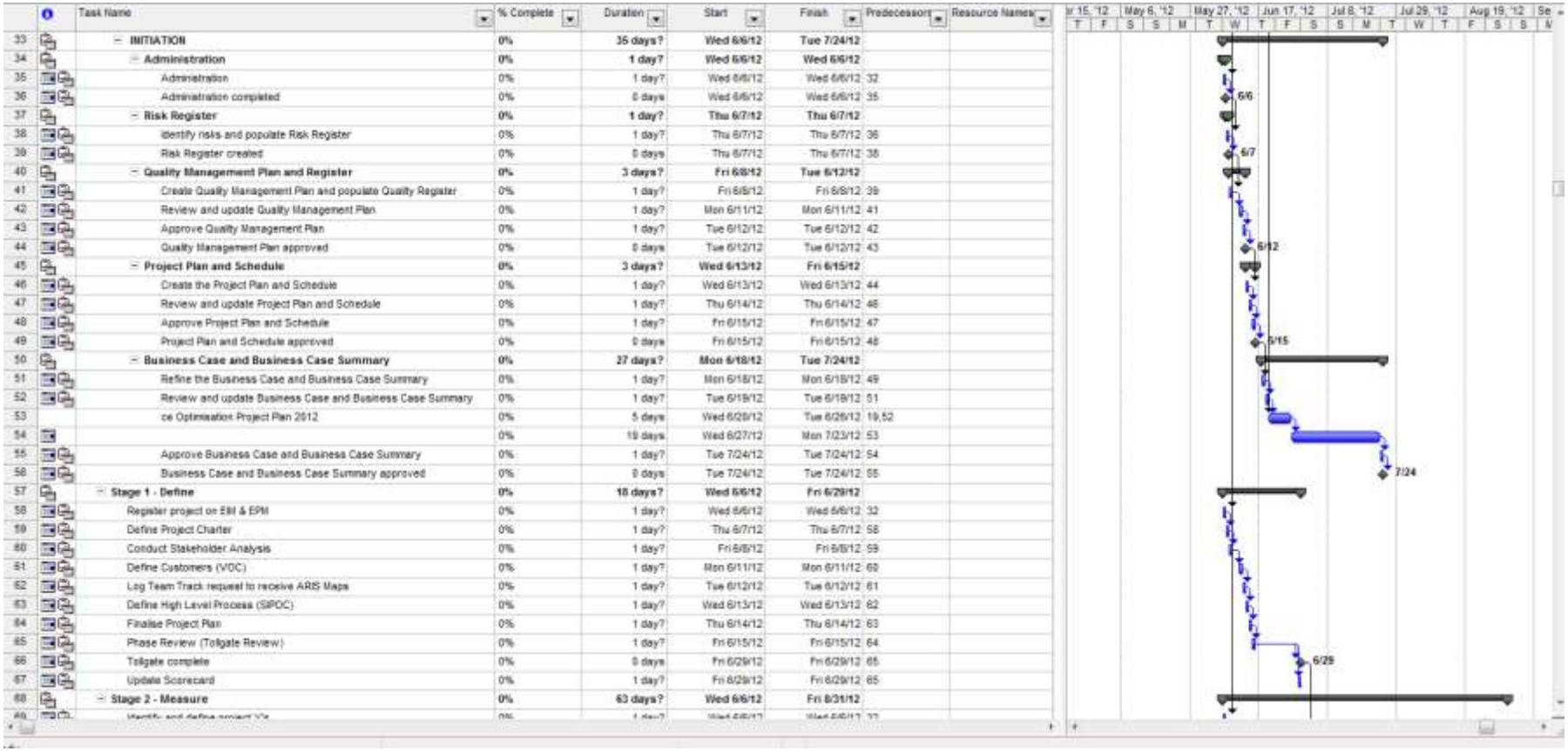
Rgds,
XX

Appendix J: Sample of BPR Project Plans

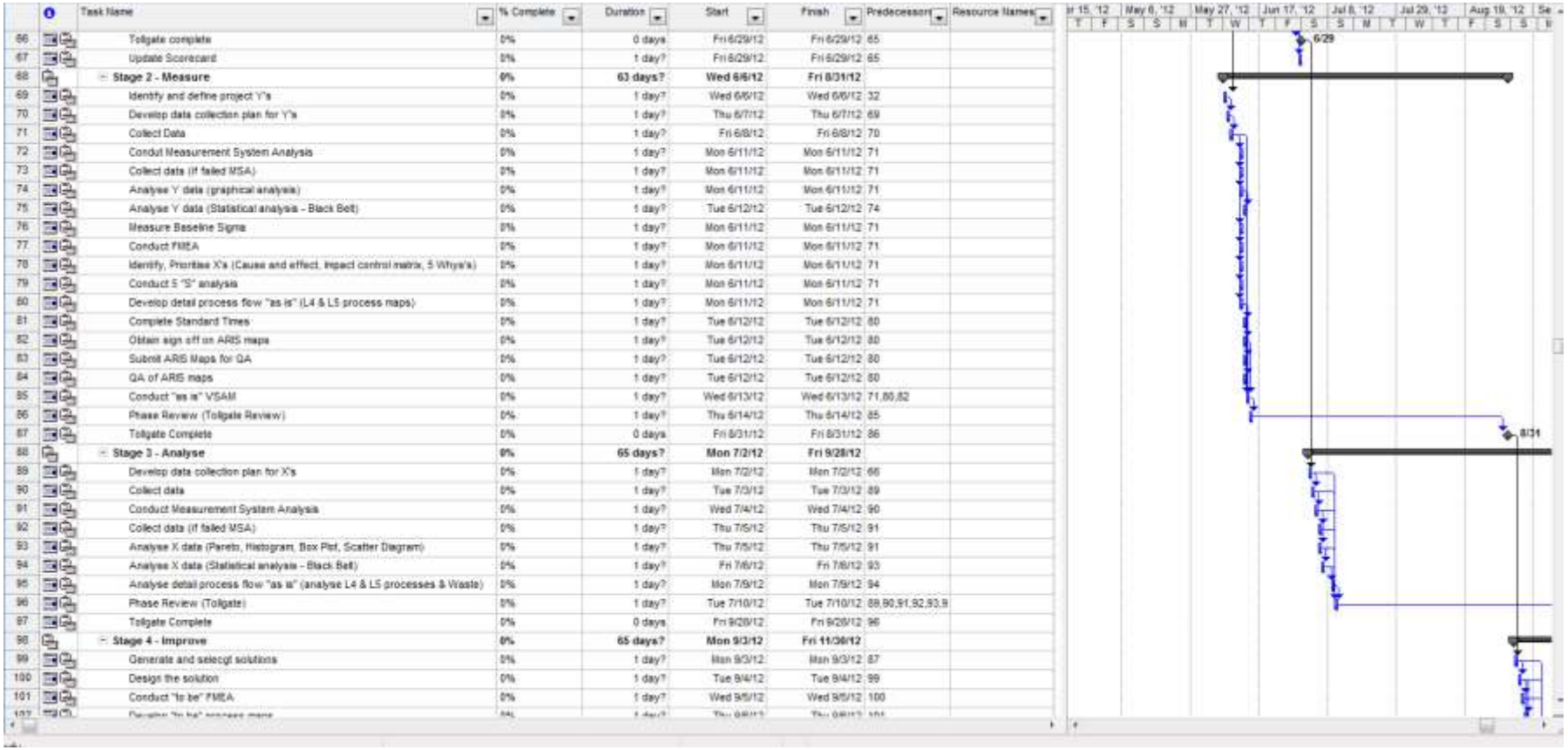
The following inserts are taken from the project plans that were analysed as part of the research. The plans were published on the Microsoft Projects Tool that was used as a standard within the organisation.



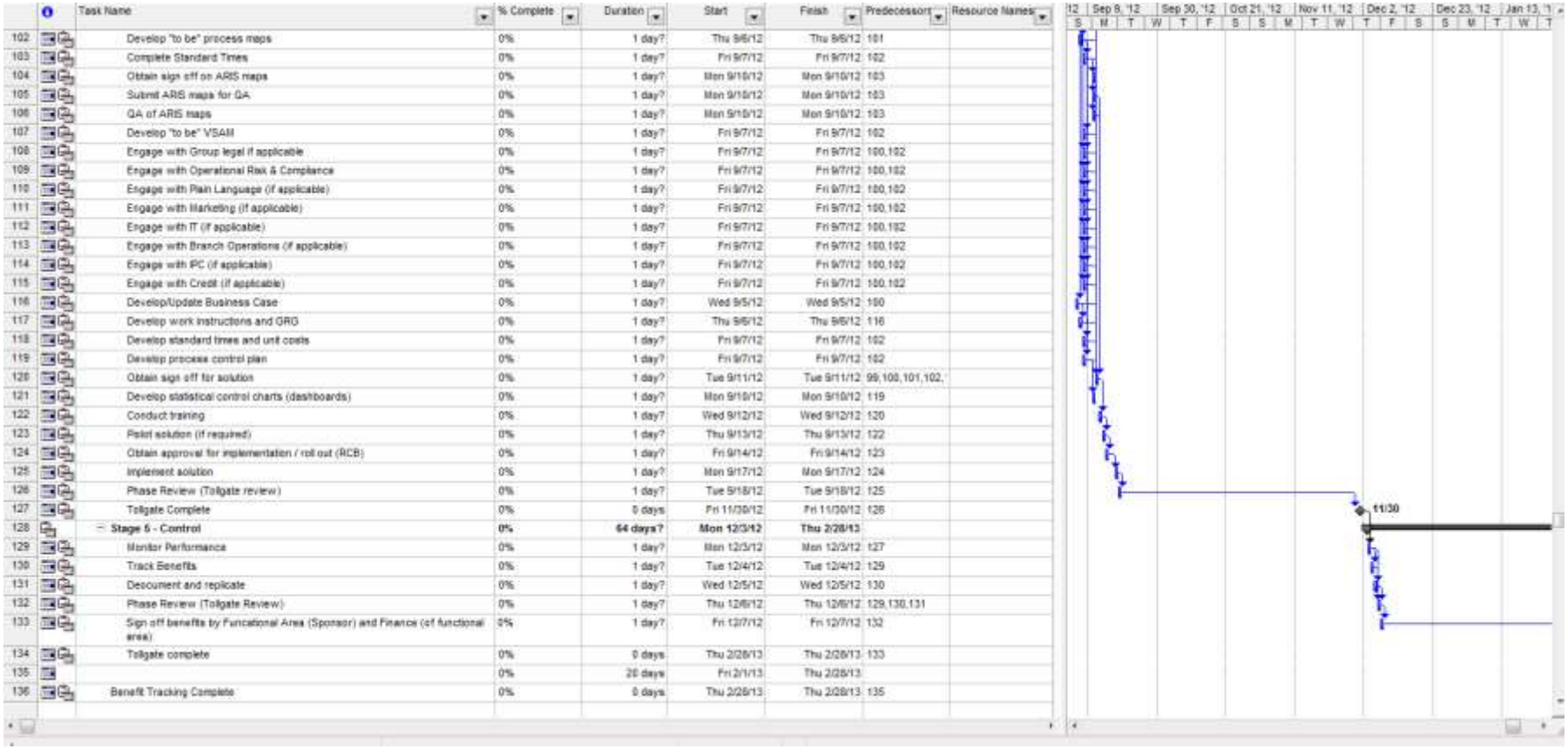
	Task Name	% Complete	Duration	Start	Finish	Predecessors	Resource Names
0	[redacted] Project_Schedule_2012	0%	326 days?	Thu 12/1/11	Thu 2/28/13		
1	Stage 0 - Start Up	0%	169 days?	Thu 12/1/11	Tue 7/24/12		
2	START UP	0%	134 days	Thu 12/1/11	Tue 6/5/12		
3	Administration	0%	109 days	Thu 12/1/11	Tue 5/1/12		
4	Administration	0%	109 days	Thu 12/1/11	Tue 5/1/12		Enterprise Value Lea
5	Administration completed	0%	0 days	Tue 5/1/12	Tue 5/1/12	4	Enterprise Value Lea
6	Current State Assessment	0%	108 days	Thu 12/1/11	Mon 4/30/12		
7	se Value Lead(Permanent) Lead	0%	108 days	Thu 12/1/11	Mon 4/30/12		
8		0%	0 days	Mon 4/30/12	Mon 4/30/12		
9	Project Registration	0%	0 days	Wed 5/30/12	Wed 5/30/12		
10	Project Registration for Start-Up completed	0%	0 days	Wed 5/30/12	Wed 5/30/12		
11	Project Brief	0%	22 days	Mon 3/19/12	Tue 4/17/12		
12	Design and appoint the Project Management Team	0%	1 day	Mon 3/19/12	Mon 3/19/12		
13	Create outline Project Brief	0%	1 day	Mon 3/19/12	Mon 3/19/12		
14	Select the project approach and create the Project Brief	0%	17 days	Mon 3/19/12	Tue 4/10/12		
15	Approve Project Brief	0%	5 days	Wed 4/11/12	Tue 4/17/12	14	
16	Project Brief approved	0%	0 days	Tue 4/17/12	Tue 4/17/12	15	
17	Business Case	0%	13 days	Wed 5/2/12	Fri 5/18/12		
18	Select the project approach and create the Business Case	0%	5 days	Wed 5/2/12	Tue 5/8/12	16FS+10 days	
19		0%	0 days	Tue 5/8/12	Tue 5/8/12	18	
20		0%	3 days	Wed 5/9/12	Fri 5/11/12	19	
21	Approve Business Case	0%	5 days	Mon 5/14/12	Fri 5/18/12	20	
22	Business Case approved	0%	0 days	Fri 5/18/12	Fri 5/18/12	21	
23	Project Management Structure	0%	4 days	Mon 5/21/12	Thu 5/24/12		
24	Create the Project Management Structure	0%	2 days	Mon 5/21/12	Tue 5/22/12	21	
25	Review and update the Project Management Structure	0%	2 days	Wed 5/23/12	Thu 5/24/12	24	
26	Approve the Project Management Structure	0%	2 days	Wed 5/23/12	Thu 5/24/12	24	
27	Project Management Structure approved	0%	0 days	Thu 5/24/12	Thu 5/24/12	26	
28	Initiation Stage Plan	0%	8 days	Fri 5/25/12	Tue 6/5/12		
29	Plan the Initiation Stage	0%	5 days	Fri 5/25/12	Thu 5/31/12	27	
30	Review and update Initiation Stage Plan	0%	2 days	Fri 6/1/12	Mon 6/4/12	29	
31	Approve Initiation Stage Plan	0%	1 day	Tue 6/5/12	Tue 6/5/12	30	
32	Initiation Stage Plan approved	0%	0 days	Tue 6/5/12	Tue 6/5/12	31	
33	INITIATION	0%	35 days?	Wed 6/6/12	Tue 7/24/12		
34	Administration	0%	1 day?	Wed 6/6/12	Wed 6/6/12		
35	Administration	0%	1 day?	Wed 6/6/12	Wed 6/6/12	32	



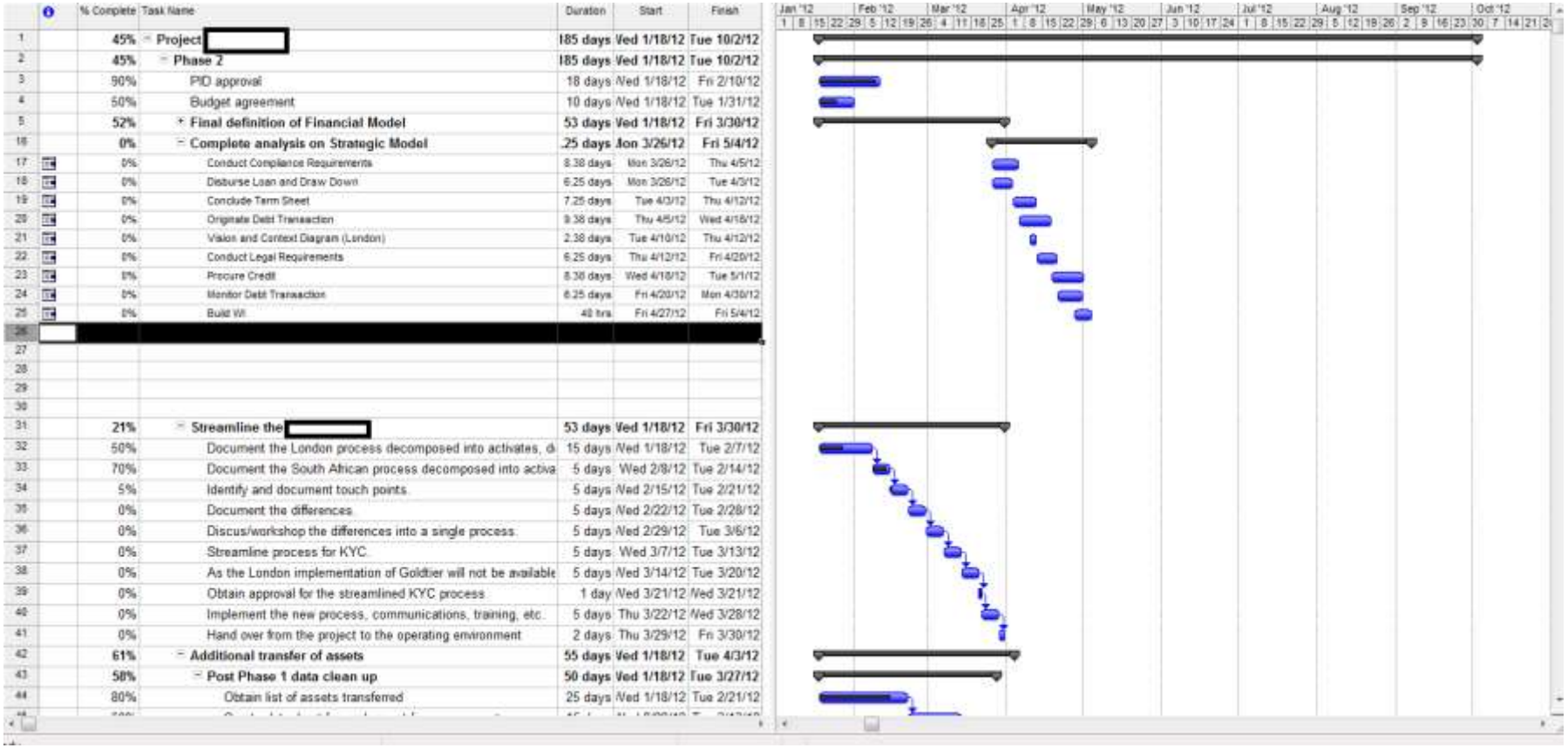
	Task Name	% Complete	Duration	Start	Finish	Predecessors	Resource Names
33	**INITIATION**	**0%**	**35 days?**	**Wed 6/6/12**	**Tue 7/24/12**		
34	**Administration**	**0%**	**1 day?**	**Wed 6/6/12**	**Wed 6/6/12**		
35	Administration	0%	1 day?	Wed 6/6/12	Wed 6/6/12	32	
36	Administration completed	0%	0 days	Wed 6/6/12	Wed 6/6/12	35	
37	**Risk Register**	**0%**	**1 day?**	**Thu 6/7/12**	**Thu 6/7/12**		
38	Identify risks and populate Risk Register	0%	1 day?	Thu 6/7/12	Thu 6/7/12	36	
39	Risk Register created	0%	0 days	Thu 6/7/12	Thu 6/7/12	38	
40	**Quality Management Plan and Register**	**0%**	**3 days?**	**Fri 6/8/12**	**Tue 6/12/12**		
41	Create Quality Management Plan and populate Quality Register	0%	1 day?	Fri 6/8/12	Fri 6/8/12	39	
42	Review and update Quality Management Plan	0%	1 day?	Mon 6/11/12	Mon 6/11/12	41	
43	Approve Quality Management Plan	0%	1 day?	Tue 6/12/12	Tue 6/12/12	42	
44	Quality Management Plan approved	0%	0 days	Tue 6/12/12	Tue 6/12/12	43	
45	**Project Plan and Schedule**	**0%**	**3 days?**	**Wed 6/13/12**	**Fri 6/15/12**		
46	Create the Project Plan and Schedule	0%	1 day?	Wed 6/13/12	Wed 6/13/12	44	
47	Review and update Project Plan and Schedule	0%	1 day?	Thu 6/14/12	Thu 6/14/12	46	
48	Approve Project Plan and Schedule	0%	1 day?	Fri 6/15/12	Fri 6/15/12	47	
49	Project Plan and Schedule approved	0%	0 days	Fri 6/15/12	Fri 6/15/12	48	
50	**Business Case and Business Case Summary**	**0%**	**27 days?**	**Mon 6/18/12**	**Tue 7/24/12**		
51	Refine the Business Case and Business Case Summary	0%	1 day?	Mon 6/18/12	Mon 6/18/12	49	
52	Review and update Business Case and Business Case Summary	0%	1 day?	Tue 6/19/12	Tue 6/19/12	51	
53	ce Optimisation Project Plan 2012	0%	5 days	Wed 6/20/12	Tue 6/26/12	19,52	
54		0%	19 days	Wed 6/27/12	Mon 7/23/12	53	
55	Approve Business Case and Business Case Summary	0%	1 day?	Tue 7/24/12	Tue 7/24/12	54	
56	Business Case and Business Case Summary approved	0%	0 days	Tue 7/24/12	Tue 7/24/12	55	
57	**Stage 1 - Define**	**0%**	**18 days?**	**Wed 6/6/12**	**Fri 6/29/12**		
58	Register project on EBI & EPM	0%	1 day?	Wed 6/6/12	Wed 6/6/12	32	
59	Define Project Charter	0%	1 day?	Thu 6/7/12	Thu 6/7/12	58	
60	Conduct Stakeholder Analysis	0%	1 day?	Fri 6/8/12	Fri 6/8/12	59	
61	Define Customers (VOC)	0%	1 day?	Mon 6/11/12	Mon 6/11/12	60	
62	Log Team Track request to receive ARIS Maps	0%	1 day?	Tue 6/12/12	Tue 6/12/12	61	
63	Define High Level Process (SIPOC)	0%	1 day?	Wed 6/13/12	Wed 6/13/12	62	
64	Finalise Project Plan	0%	1 day?	Thu 6/14/12	Thu 6/14/12	63	
65	Phase Review (Tollgate Review)	0%	1 day?	Fri 6/15/12	Fri 6/15/12	64	
66	Tollgate complete	0%	0 days	Fri 6/29/12	Fri 6/29/12	65	
67	Update Scorecard	0%	1 day?	Fri 6/29/12	Fri 6/29/12	65	
68	**Stage 2 - Measure**	**0%**	**63 days?**	**Wed 6/6/12**	**Fri 8/31/12**		



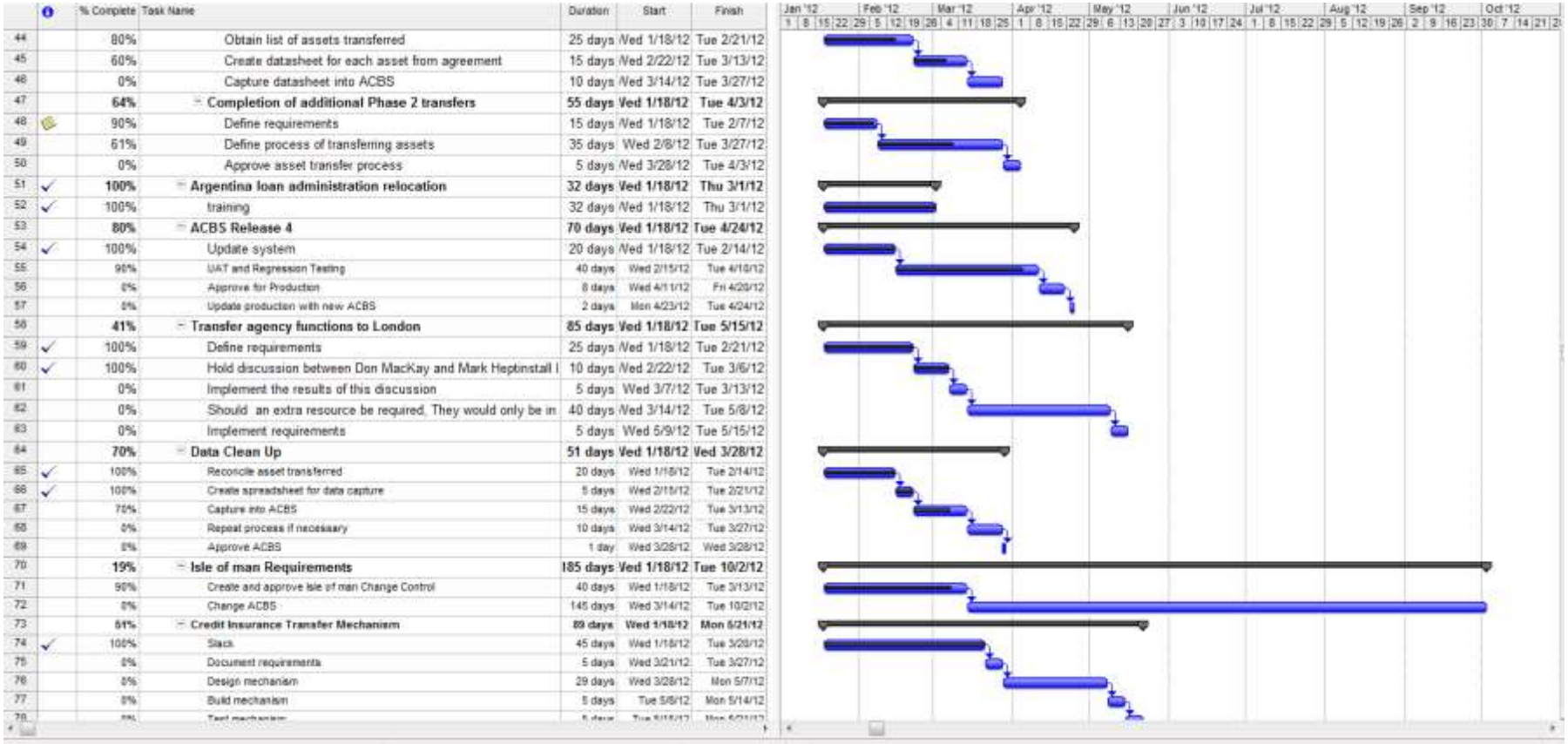
	Task Name	% Complete	Duration	Start	Finish	Predecessors	Resource Names
66	Tollgate complete	0%	0 days	Fri 6/29/12	Fri 6/29/12	65	
67	Update Scorecard	0%	1 day?	Fri 6/29/12	Fri 6/29/12	65	
68	**Stage 2 - Measure**	**0%**	**63 days?**	**Wed 6/6/12**	**Fri 8/31/12**		
69	Identify and define project Y's	0%	1 day?	Wed 6/6/12	Wed 6/6/12	32	
70	Develop data collection plan for Y's	0%	1 day?	Thu 6/7/12	Thu 6/7/12	69	
71	Collect Data	0%	1 day?	Fri 6/8/12	Fri 6/8/12	70	
72	Condut Measurement System Analysis	0%	1 day?	Mon 6/11/12	Mon 6/11/12	71	
73	Collect data (if failed MSA)	0%	1 day?	Mon 6/11/12	Mon 6/11/12	71	
74	Analyse Y data (graphical analysis)	0%	1 day?	Mon 6/11/12	Mon 6/11/12	71	
75	Analyse Y data (Statistical analysis - Black Belt)	0%	1 day?	Tue 6/12/12	Tue 6/12/12	74	
76	Measure Baseline Sigma	0%	1 day?	Mon 6/11/12	Mon 6/11/12	71	
77	Conduct FMEA	0%	1 day?	Mon 6/11/12	Mon 6/11/12	71	
78	Identify, Prioritise X's (Cause and effect, Impact control matrix, 5 Whys's)	0%	1 day?	Mon 6/11/12	Mon 6/11/12	71	
79	Conduct 5 "S" analysis	0%	1 day?	Mon 6/11/12	Mon 6/11/12	71	
80	Develop detail process flow "as is" (L4 & L5 process maps)	0%	1 day?	Mon 6/11/12	Mon 6/11/12	71	
81	Complete Standard Times	0%	1 day?	Tue 6/12/12	Tue 6/12/12	80	
82	Obtain sign off on ARIS maps	0%	1 day?	Tue 6/12/12	Tue 6/12/12	80	
83	Submit ARIS Maps for QA	0%	1 day?	Tue 6/12/12	Tue 6/12/12	80	
84	QA of ARIS maps	0%	1 day?	Tue 6/12/12	Tue 6/12/12	80	
85	Conduct "as is" VSAM	0%	1 day?	Wed 6/13/12	Wed 6/13/12	71,80,82	
86	Phase Review (Tollgate Review)	0%	1 day?	Thu 6/14/12	Thu 6/14/12	85	
87	Tollgate Complete	0%	0 days	Fri 8/31/12	Fri 8/31/12	86	
88	**Stage 3 - Analyse**	**0%**	**65 days?**	**Mon 7/2/12**	**Fri 9/28/12**		
89	Develop data collection plan for X's	0%	1 day?	Mon 7/2/12	Mon 7/2/12	66	
90	Collect data	0%	1 day?	Tue 7/3/12	Tue 7/3/12	89	
91	Conduct Measurement System Analysis	0%	1 day?	Wed 7/4/12	Wed 7/4/12	90	
92	Collect data (if failed MSA)	0%	1 day?	Thu 7/5/12	Thu 7/5/12	91	
93	Analyse X data (Pareto, Histogram, Box Plot, Scatter Diagram)	0%	1 day?	Thu 7/5/12	Thu 7/5/12	91	
94	Analyse X data (Statistical analysis - Black Belt)	0%	1 day?	Fri 7/6/12	Fri 7/6/12	93	
95	Analyse detail process flow "as is" (analyse L4 & L5 processes & Waste)	0%	1 day?	Mon 7/9/12	Mon 7/9/12	94	
96	Phase Review (Tollgate)	0%	1 day?	Tue 7/10/12	Tue 7/10/12	88,90,91,92,93,9	
97	Tollgate Complete	0%	0 days	Fri 9/28/12	Fri 9/28/12	96	
98	**Stage 4 - Improve**	**0%**	**65 days?**	**Mon 9/3/12**	**Fri 11/30/12**		
99	Generate and selecgt solutions	0%	1 day?	Mon 9/3/12	Mon 9/3/12	87	
100	Design the solution	0%	1 day?	Tue 9/4/12	Tue 9/4/12	99	
101	Conduct "to be" FMEA	0%	1 day?	Wed 9/5/12	Wed 9/5/12	100	



	Task Name	% Complete	Duration	Start	Finish	Predecessors	Resource Names
102	Develop "to be" process maps	0%	1 day?	Thu 9/6/12	Thu 9/6/12	101	
103	Complete Standard Times	0%	1 day?	Fri 9/7/12	Fri 9/7/12	102	
104	Obtain sign off on ARIS maps	0%	1 day?	Mon 9/10/12	Mon 9/10/12	103	
105	Submit ARIS maps for QA	0%	1 day?	Mon 9/10/12	Mon 9/10/12	103	
106	QA of ARIS maps	0%	1 day?	Mon 9/10/12	Mon 9/10/12	103	
107	Develop "to be" VSAM	0%	1 day?	Fri 9/7/12	Fri 9/7/12	102	
108	Engage with Group legal if applicable	0%	1 day?	Fri 9/7/12	Fri 9/7/12	100,102	
109	Engage with Operational Risk & Compliance	0%	1 day?	Fri 9/7/12	Fri 9/7/12	100,102	
110	Engage with Plain Language (if applicable)	0%	1 day?	Fri 9/7/12	Fri 9/7/12	100,102	
111	Engage with Marketing (if applicable)	0%	1 day?	Fri 9/7/12	Fri 9/7/12	100,102	
112	Engage with IT (if applicable)	0%	1 day?	Fri 9/7/12	Fri 9/7/12	100,102	
113	Engage with Branch Operations (if applicable)	0%	1 day?	Fri 9/7/12	Fri 9/7/12	100,102	
114	Engage with IPC (if applicable)	0%	1 day?	Fri 9/7/12	Fri 9/7/12	100,102	
115	Engage with Credit (if applicable)	0%	1 day?	Fri 9/7/12	Fri 9/7/12	100,102	
116	Develop/Update Business Case	0%	1 day?	Wed 9/5/12	Wed 9/5/12	100	
117	Develop work instructions and GRG	0%	1 day?	Thu 9/6/12	Thu 9/6/12	116	
118	Develop standard times and unit costs	0%	1 day?	Fri 9/7/12	Fri 9/7/12	102	
119	Develop process control plan	0%	1 day?	Fri 9/7/12	Fri 9/7/12	102	
120	Obtain sign off for solution	0%	1 day?	Tue 9/11/12	Tue 9/11/12	99,100,101,102,	
121	Develop statistical control charts (dashboards)	0%	1 day?	Mon 9/10/12	Mon 9/10/12	119	
122	Conduct training	0%	1 day?	Wed 9/12/12	Wed 9/12/12	120	
123	Pilot solution (if required)	0%	1 day?	Thu 9/13/12	Thu 9/13/12	122	
124	Obtain approval for implementation / roll out (RCB)	0%	1 day?	Fri 9/14/12	Fri 9/14/12	123	
125	Implement solution	0%	1 day?	Mon 9/17/12	Mon 9/17/12	124	
126	Phase Review (Tollgate review)	0%	1 day?	Tue 9/18/12	Tue 9/18/12	125	
127	Tollgate Complete	0%	0 days	Fri 11/30/12	Fri 11/30/12	126	
128	**Stage 6 - Control**	**0%**	**64 days?**	**Mon 12/3/12**	**Thu 2/28/13**		
129	Monitor Performance	0%	1 day?	Mon 12/3/12	Mon 12/3/12	127	
130	Track Benefits	0%	1 day?	Tue 12/4/12	Tue 12/4/12	129	
131	Document and replicate	0%	1 day?	Wed 12/5/12	Wed 12/5/12	130	
132	Phase Review (Tollgate Review)	0%	1 day?	Thu 12/6/12	Thu 12/6/12	129,130,131	
133	Sign off benefits by Funcational Area (Sponsor) and Finance (of functional area)	0%	1 day?	Fri 12/7/12	Fri 12/7/12	132	
134	Tollgate complete	0%	0 days	Thu 2/28/13	Thu 2/28/13	133	
135		0%	20 days	Fri 2/1/13	Thu 2/28/13		
136	Benefit Tracking Complete	0%	0 days	Thu 2/28/13	Thu 2/28/13	135	



	% Complete	Task Name	Duration	Start	Finish
1	45%	Project [redacted]	185 days	Wed 1/18/12	Tue 10/2/12
2	45%	Phase 2	185 days	Wed 1/18/12	Tue 10/2/12
3	90%	PID approval	18 days	Wed 1/18/12	Fri 2/10/12
4	50%	Budget agreement	10 days	Wed 1/18/12	Tue 1/31/12
5	52%	Final definition of Financial Model	53 days	Wed 1/18/12	Fri 3/30/12
16	0%	Complete analysis on Strategic Model	25 days	Mon 3/26/12	Fri 5/4/12
17	0%	Conduct Compliance Requirements	8.38 days	Mon 3/26/12	Thu 4/5/12
18	0%	Disburse Loan and Draw Down	6.25 days	Mon 3/26/12	Tue 4/3/12
19	0%	Conclude Term Sheet	7.25 days	Tue 4/3/12	Thu 4/12/12
20	0%	Originate Debt Transaction	9.38 days	Thu 4/5/12	Wed 4/18/12
21	0%	Vision and Context Diagram (London)	2.38 days	Tue 4/10/12	Thu 4/12/12
22	0%	Conduct Legal Requirements	6.25 days	Thu 4/12/12	Fri 4/20/12
23	0%	Procure Credit	8.38 days	Wed 4/18/12	Tue 5/1/12
24	0%	Monitor Debt Transaction	6.25 days	Fri 4/20/12	Mon 4/30/12
25	0%	Build WI	48 hrs	Fri 4/27/12	Fri 5/4/12
26		[redacted]			
27					
28					
29					
30					
31	21%	Streamline the [redacted]	53 days	Wed 1/18/12	Fri 3/30/12
32	50%	Document the London process decomposed into activates, d	15 days	Wed 1/18/12	Tue 2/7/12
33	70%	Document the South African process decomposed into activa	5 days	Wed 2/8/12	Tue 2/14/12
34	5%	Identify and document touch points	5 days	Wed 2/15/12	Tue 2/21/12
35	0%	Document the differences	5 days	Wed 2/22/12	Tue 2/28/12
36	0%	Discus/workshop the differences into a single process	5 days	Wed 2/29/12	Tue 3/6/12
37	0%	Streamline process for KYC	5 days	Wed 3/7/12	Tue 3/13/12
38	0%	As the London implementation of Goldtier will not be available	5 days	Wed 3/14/12	Tue 3/20/12
39	0%	Obtain approval for the streamlined KYC process	1 day	Wed 3/21/12	Wed 3/21/12
40	0%	Implement the new process, communications, training, etc.	5 days	Thu 3/22/12	Wed 3/28/12
41	0%	Hand over from the project to the operating environment	2 days	Thu 3/29/12	Fri 3/30/12
42	61%	Additional transfer of assets	55 days	Wed 1/18/12	Tue 4/3/12
43	58%	Post Phase 1 data clean up	50 days	Wed 1/18/12	Tue 3/27/12
44	80%	Obtain list of assets transferred	25 days	Wed 1/18/12	Tue 2/21/12



		% Complete	Task Name	Duration	Start	Finish
44		80%	Obtain list of assets transferred	25 days	Wed 1/18/12	Tue 2/21/12
45		60%	Create datasheet for each asset from agreement	15 days	Wed 2/22/12	Tue 3/13/12
46		0%	Capture datasheet into ACBS	10 days	Wed 3/14/12	Tue 3/27/12
47		**64%**	**Completion of additional Phase 2 transfers**	**55 days**	**Wed 1/18/12**	**Tue 4/3/12**
48		90%	Define requirements	15 days	Wed 1/18/12	Tue 2/7/12
49		61%	Define process of transferring assets	35 days	Wed 2/8/12	Tue 3/27/12
50		0%	Approve asset transfer process	5 days	Wed 3/28/12	Tue 4/3/12
51	✓	**100%**	**Argentina loan administration relocation**	**32 days**	**Wed 1/18/12**	**Thu 3/1/12**
52	✓	100%	training	32 days	Wed 1/18/12	Thu 3/1/12
53		**80%**	**ACBS Release 4**	**70 days**	**Wed 1/18/12**	**Tue 4/24/12**
54	✓	100%	Update system	20 days	Wed 1/18/12	Tue 2/14/12
55		90%	UAT and Regression Testing	40 days	Wed 2/15/12	Tue 4/10/12
56		0%	Approve for Production	8 days	Wed 4/11/12	Fri 4/20/12
57		0%	Update production with new ACBS	2 days	Mon 4/23/12	Tue 4/24/12
58		**41%**	**Transfer agency functions to London**	**85 days**	**Wed 1/18/12**	**Tue 5/15/12**
59	✓	100%	Define requirements	25 days	Wed 1/18/12	Tue 2/21/12
60	✓	100%	Hold discussion between Don MacKay and Mark Heptinstall	10 days	Wed 2/22/12	Tue 3/6/12
61		0%	Implement the results of this discussion	5 days	Wed 3/7/12	Tue 3/13/12
62		0%	Should an extra resource be required. They would only be in	40 days	Wed 3/14/12	Tue 5/8/12
63		0%	Implement requirements	5 days	Wed 5/9/12	Tue 5/15/12
64		**70%**	**Data Clean Up**	**51 days**	**Wed 1/18/12**	**Wed 3/28/12**
65	✓	100%	Reconcile asset transferred	20 days	Wed 1/18/12	Tue 2/14/12
66	✓	100%	Create spreadsheet for data capture	5 days	Wed 2/15/12	Tue 2/21/12
67		70%	Capture into ACBS	15 days	Wed 2/22/12	Tue 3/13/12
68		0%	Repeat process if necessary	10 days	Wed 3/14/12	Tue 3/27/12
69		0%	Approve ACBS	1 day	Wed 3/28/12	Wed 3/28/12
70		**19%**	**Isle of man Requirements**	**185 days**	**Wed 1/18/12**	**Tue 10/2/12**
71		90%	Create and approve Isle of man Change Control	40 days	Wed 1/18/12	Tue 3/13/12
72		0%	Change ACBS	145 days	Wed 3/14/12	Tue 10/2/12
73		**51%**	**Credit Insurance Transfer Mechanism**	**89 days**	**Wed 1/18/12**	**Mon 5/21/12**
74	✓	100%	Slack	45 days	Wed 1/18/12	Tue 3/20/12
75		0%	Document requirements	5 days	Wed 3/21/12	Tue 3/27/12
76		0%	Design mechanism	29 days	Wed 3/28/12	Mon 5/7/12
77		0%	Build mechanism	5 days	Tue 5/8/12	Mon 5/14/12
78		0%	Test mechanism	5 days	Tue 5/15/12	Mon 5/21/12

Appendix K: Presentation Feedback Template

PHD Thesis Presentation Feedback Survey

24 October 2014

Presented by: Imtiaz Abdul Kader

Doctoral Student at the University of Witwatersrand

Dear Presentation Invitee

Thank you for accepting and attending the presentation that was hosted by Imtiaz Abdul Kader, a doctoral student of the Engineering and Built Environment Faculty at the University of Witwatersrand. The presentation covered a brief overview of the research journey and a detailed description of the Pre Project Organisation Environment Enablement Model (P^2OE^2M) which was propounded by the researcher as a management approach, which if applied, would improve the success of an executed BPR project within the organisation and more specifically within the researched context of a financial institution.

As part of the presentation I respectfully request a few more minutes of your time, in order to provide feedback on a few aspects covered by the feedback questionnaire that follows. Please note that no personal information will be collected. The feedback will be based on understanding, firstly, which domain would you be best representative of, and secondly, to solicit feedback on the PHD research, specifically as it relates to the P^2OE^2M model described.

I look forward to your feedback.

Thank you.

Imtiaz Abdul Kader

Question 1:

Please cross the domain/discipline that would best describe you being a representative of:

☐ Project Management ☐ Business Process Reengineering ☐ Other ☐

Question 2:

Please indicate which area best describes your affiliation:

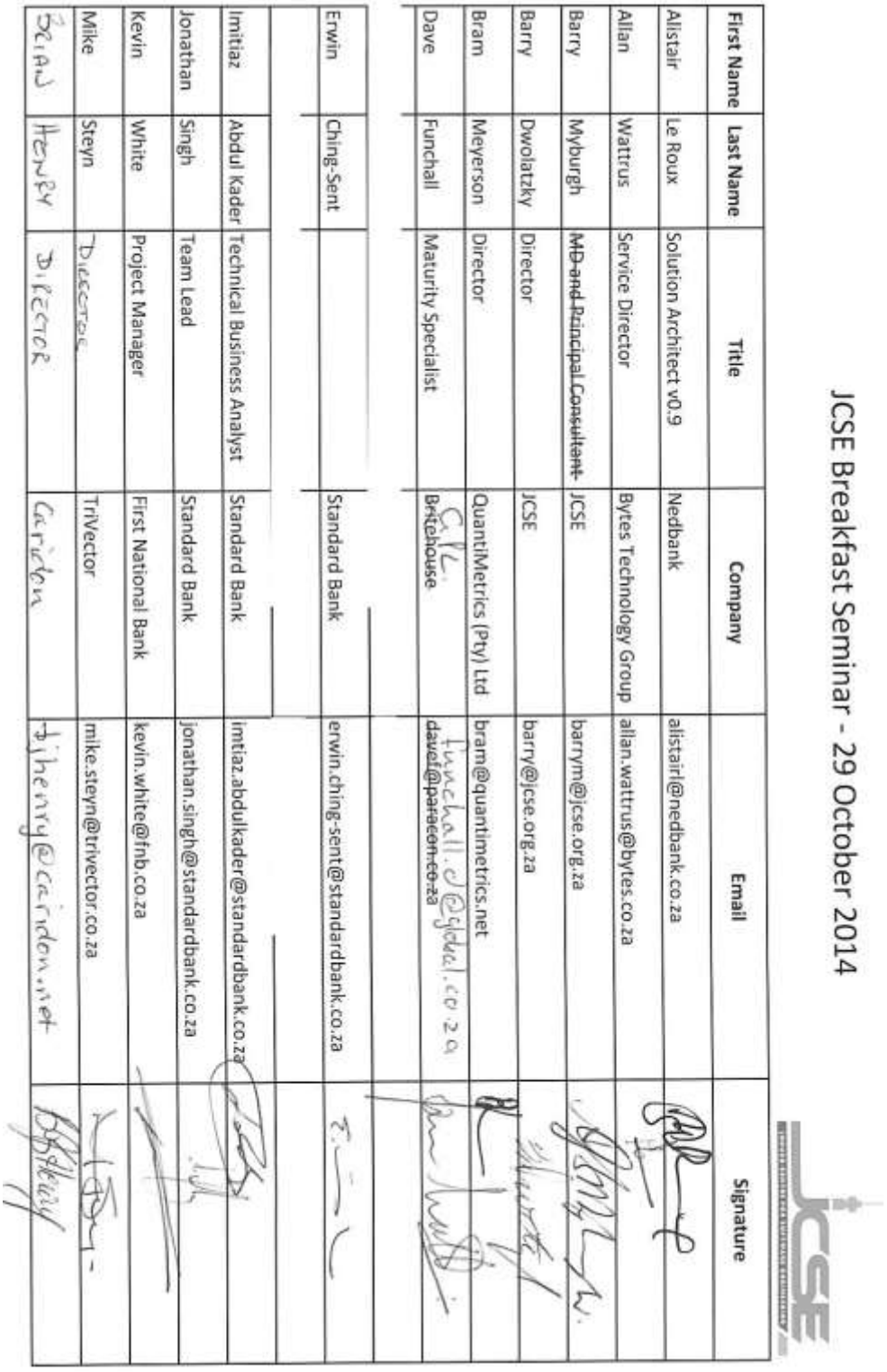
☐ University Sector ☐ Corporate Sector ☐ Both

Question 3:

Please indicate your perception of the research and the P^2OE^2M model presented. Please consider aspects such as domain knowledge and value contribution.

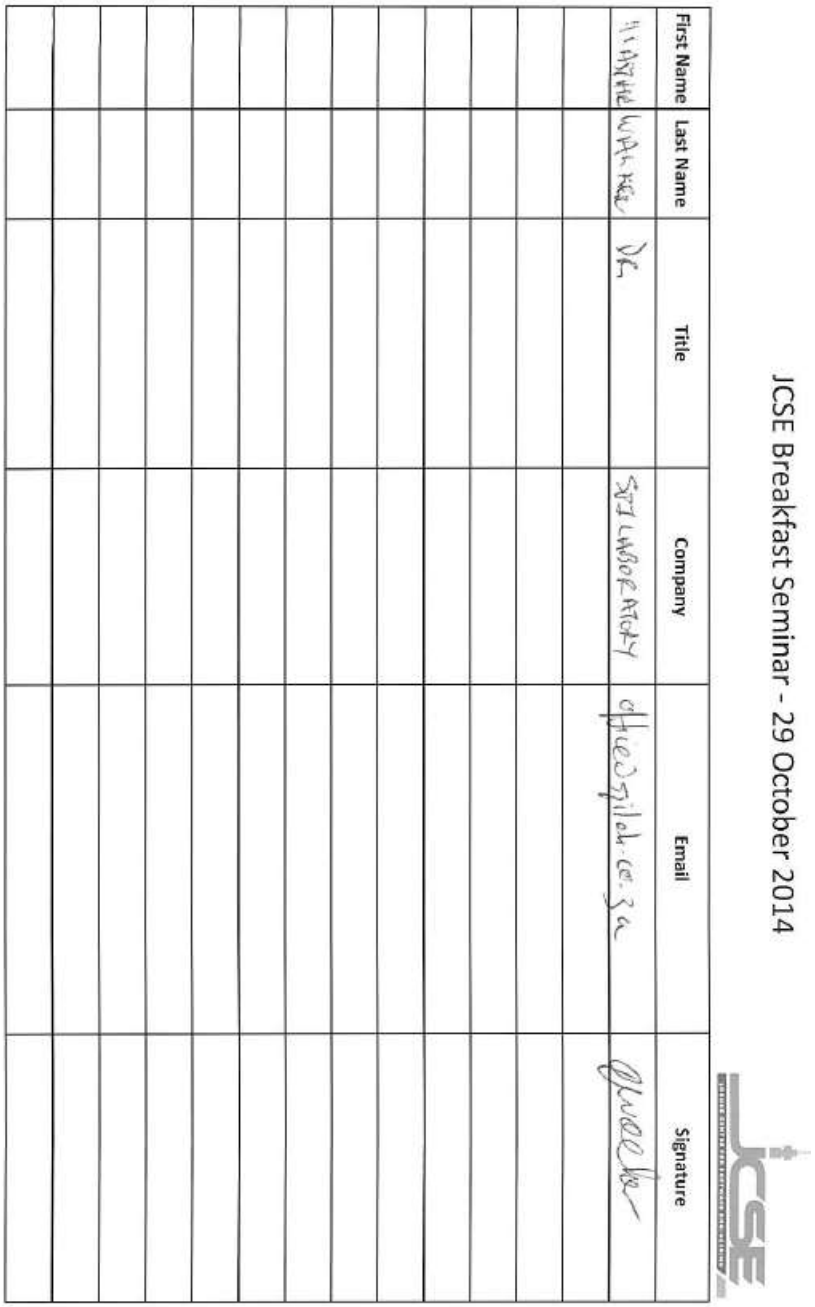
Appendix L: Presentation Attendee List

Contained in this appendix is the signed register of the people that attended a presentation that was conducted on the 29th October 2014 at The University of the Witwatersrand. All names appear with permission by the signatories. A very brief bio for each participant appears after the register.



JCSE Breakfast Seminar - 29 October 2014

First Name	Last Name	Title	Company	Email	Signature
Alistair	Le Roux	Solution Architect v0.9	Nedbank	alistairl@nedbank.co.za	
Allan	Wattrus	Service Director	Bytes Technology Group	allan.wattrus@bytes.co.za	
Barry	Myburgh	~~MD and Principal Consultant~~	JCSE	barrym@jcse.org.za	
Barry	Dwolatzky	Director	JCSE	barry@jcse.org.za	
Bram	Meyerson	Director	QuantiMetrics (Pty) Ltd	bram@quantimetrics.net	
Dave	Funchall	Maturity Specialist	~~Britehouse~~	~~dave@parsecon.co.za~~	
Erwin	Ching-Sent		Standard Bank	erwin.ching-sent@standardbank.co.za	
Imtiaz	Abdul Kader	Technical Business Analyst	Standard Bank	imtiaz.abdulkader@standardbank.co.za	
Jonathan	Singh	Team Lead	Standard Bank	jonathan.singh@standardbank.co.za	
Kevin	White	Project Manager	First National Bank	kevin.white@fnb.co.za	
Mike	Steyn	Director	TriVector	mike.steyn@trivector.co.za	



Alistair Le Roux: Alistair is a software engineer and solution architect at one of South Africa's largest Banks. He has worked on numerous IT projects and was recently exposed to Business Process Reengineering in one of his company's major projects. He was keen to share his experiences from this recent project.

Allan Wattrus: Allan is currently involved in a project that has a major Business Process Reengineering component and was interested in the research and its results.

Barry Myburgh: Barry is currently working within the Johannesburg Centre for Software Engineering (JCSE) as a Project Manager. He has consulted to most of the banks in South Africa focusing on project management of various types of projects including Business Process Reengineering type projects. He also lectures

at the University of the Witwatersrand on Project Management. He was keen to provide insights into his experiences on why projects fail.

Professor Barry Dwolatzky: Professor Barry Dowlatzky, in addition to being the research supervisor also participated in the presentation. He is currently the Head of Software Engineering at the School of Electrical Engineering at The University of the Witwatersrand. He brought to the presentation 10 years knowledge in process improvement having worked with the CMMI model and Team Software Process / Personal Software Process. He has also consulted to various banks in South Africa.

Bram Meyerson: Bram currently runs his own consultancy firm looking at estimating project delivery for various companies including the banks of South Africa. His focus is currently on understanding the success of projects linked to project planning and the project plans themselves. He shares an interest in understanding why project fails.

Dr David Funchall: David is an IT business specialist with a strong mix of management consulting in business, Information Technology, process engineering and re-engineering, contract management, portfolio, programme and project management and audit. He was selected as the external auditor to further strengthen the validity of the research.

Erwin Ching-Sent: Erwin is currently a Solution Architect for one of the large banks in South Africa. He also spent many years as a Business Analyst and Process Engineer. He was keen to share his experiences on process reengineering type projects and projects in general. He also reviewed the research results as part of the research validation.

Jonathan Singh: Jonathan is a software engineer and has worked on numerous projects focused on changing the business and IT architectural landscapes. His knowledge and experience from a project execution perspective added to the validity of the case study findings.

Kevin White: Kevin is a practicing professional project manager. He has worked in the organisation that formed part of the case study and on one of the case study units of analysis. He was critical in adding to the validation of the case study results.

Mike Steyn: Mike has been in the Business Process Management domain for over 20 years. He has project led many Business Process Reengineering projects in various business sectors including the banking sector. He has experienced both project successes and failures. His experiences were also invaluable in confirming the knowledge addition to the Business Process Reengineering Project Domain.

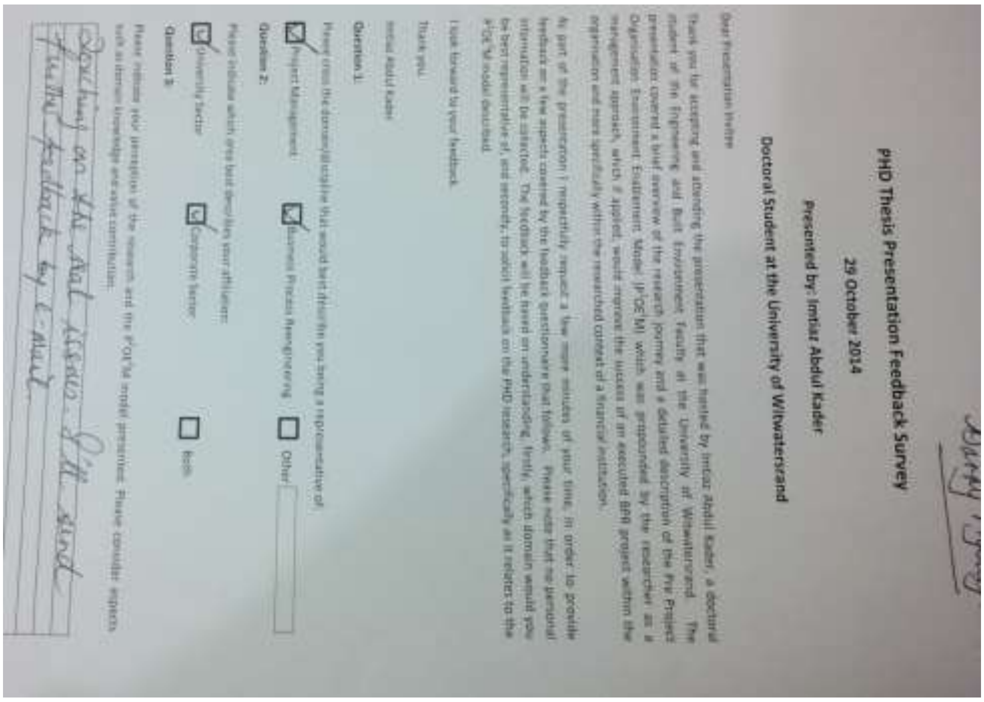
Brian Henry: Brian has been a consultant to the major banks of South Africa for numerous years. He has been involved in various types of projects including IT and Business Process Reengineering project types. He currently jointly runs a consulting firm focusing on Business Continuity Management. His knowledge and experiences was shared in support of the research results and reaffirmed the need of the research and its outcomes.

Dr Alastair Walker: Alastair currently runs his own consultancy firm. He has been a Professor at the University of the Witwatersrand for 30 years in the Software Engineering faculty. He currently focusses on consulting in the Software Engineering and Process Assessment domains both locally in South Africa and internationally. His experiences and knowledge was invaluable in confirming the

research validity and knowledge addition to the Business Process Reengineering Project domain.

Appendix M: Presentation Completed Feedback Forms

Contained in this Appendix are scanned copies of the completed feedback forms that were submitted by the presentation participants. It appears with their permission.


PHD Thesis Presentation Feedback Survey

29 October 2014

Presented by: Imtiaz Abdul Kader

Doctoral Student at the University of Witwatersrand

Question 1:

Question 2:

Question 3:

PHD Thesis Presentation Feedback Survey

29 October 2014

Presented by: Imtiaz Abdul Kader

Doctoral Student at the University of Witwatersrand

Dear Presentation Invitee

Thank you for accepting and attending the presentation that was hosted by Imtiaz Abdul Kader, a doctoral student of the Engineering and Built Environment Faculty at the University of Witwatersrand. The presentation covered a brief overview of the research journey and a detailed description of the Pre Project Organisation Environment Enablement Model (P^2OE^2M) which was propounded by the researcher as a management approach, which if applied, would improve the success of an executed BPR project within the organisation and more specifically within the researched context of a financial institution.

As part of the presentation I respectfully request a few more minutes of your time, in order to provide feedback on a few aspects covered by the feedback questionnaire that follows. Please note that no personal information will be collected. The feedback will be based on understanding, firstly, which domain would you be best representative of, and secondly, to solicit feedback on the PHD research, specifically as it relates to the P^2OE^2M model described.

I look forward to your feedback.

Thank you.

Imtiaz Abdul Kader

Question 1:

Please cross the domain/discipline that would best describe you being a representative of:

☒ Project Management ☒ Business Process Reengineering ☐ Other Enterprise Maturity modelling.

Question 2:

Please indicate which area best describes your affiliation:

☐ University Sector ☐ Corporate Sector ☒ Both

Question 3:

Please indicate your perception of the research and the P^2OE^2M model presented. Please consider aspects such as domain knowledge and value contribution.

This approach and application of the model is in the right direction for the empowerment of the project manager. With regard to organisations, it should be adopted as policy for implementing projects.

PHD Thesis Presentation Feedback Survey

29 October 2014

Presented by: Imtiaz Abdul Kader

Doctoral Student at the University of Witwatersrand

Dear Presentation Invitee

Thank you for accepting and attending the presentation that was hosted by Imtiaz Abdul Kader, a doctoral student of the Engineering and Built Environment Faculty at the University of Witwatersrand. The presentation covered a brief overview of the research journey and a detailed description of the Pre Project Organisation Environment Enablement Model (P^2OE^2M) which was propounded by the researcher as a management approach, which if applied, would improve the success of an executed BPR project within the organisation and more specifically within the researched context of a financial institution.

As part of the presentation I respectfully request a few more minutes of your time, in order to provide feedback on a few aspects covered by the feedback questionnaire that follows. Please note that no personal information will be collected. The feedback will be based on understanding, firstly, which domain would you be best representative of, and secondly, to solicit feedback on the PHD research, specifically as it relates to the P^2OE^2M model described.

I look forward to your feedback.

Thank you.

Imtiaz Abdul Kader

Question 1:

Please cross the domain/discipline that would best describe you being a representative of:

☐ Project Management ☐ Business Process Reengineering ☒ Other Solution Architecture.

Question 2:

Please indicate which area best describes your affiliation:

☐ University Sector ☒ Corporate Sector ☐ Both

Question 3:

Please indicate your perception of the research and the P^2OE^2M model presented. Please consider aspects such as domain knowledge and value contribution.

There is a strong need for pre-project/program evaluation on the socio-political factors that inhibit the potential success of an initiative.

PHD Thesis Presentation Feedback Survey

29 October 2014

Presented by: Imtiaz Abdul Kader

Doctoral Student at the University of Witwatersrand

Dear Presentation Invitee

Thank you for accepting and attending the presentation that was hosted by Imtiaz Abdul Kader, a doctoral student of the Engineering and Built Environment Faculty at the University of Witwatersrand. The presentation covered a brief overview of the research journey and a detailed description of the Pre Project Organisation Environment Enablement Model (P^2OE^2M) which was propounded by the researcher as a management approach, which if applied, would improve the success of an executed BPR project within the organisation and more specifically within the researched context of a financial institution.

As part of the presentation I respectfully request a few more minutes of your time, in order to provide feedback on a few aspects covered by the feedback questionnaire that follows. Please note that no personal information will be collected. The feedback will be based on understanding, firstly, which domain would you be best representative of, and secondly, to solicit feedback on the PHD research, specifically as it relates to the P^2OE^2M model described.

I look forward to your feedback.

Thank you.

Imtiaz Abdul Kader

Question 1:

Please cross the domain/discipline that would best describe you being a representative of:

☐ Project Management ☒ Business Process Reengineering ☐ Other ☐

Question 2:

Please indicate which area best describes your affiliation:

☐ University Sector ☒ Corporate Sector ☐ Both

Question 3:

Please indicate your perception of the research and the P^2OE^2M model presented. Please consider aspects such as domain knowledge and value contribution.

I believe the model could be valuable contribution to the BPR practise and is something we could apply to engage our clients during project initiation. It should in my opinion contribute to increasing the chances of success of our BPR related projects.

PHD Thesis Presentation Feedback Survey

29 October 2014

Presented by: Imtiaz Abdul Kader

Doctoral Student at the University of Witwatersrand

Dear Presentation Invitee

Thank you for accepting and attending the presentation that was hosted by Imtiaz Abdul Kader, a doctoral student of the Engineering and Built Environment Faculty at the University of Witwatersrand. The presentation covered a brief overview of the research journey and a detailed description of the Pre Project Organisation Environment Enablement Model (P^2OE^2M) which was propounded by the researcher as a management approach, which if applied, would improve the success of an executed BPR project within the organisation and more specifically within the researched context of a financial institution.

As part of the presentation I respectfully request a few more minutes of your time, in order to provide feedback on a few aspects covered by the feedback questionnaire that follows. Please note that no personal information will be collected. The feedback will be based on understanding, firstly, which domain would you be best representative of, and secondly, to solicit feedback on the PHD research, specifically as it relates to the P^2OE^2M model described.

I look forward to your feedback.

Thank you.

Imtiaz Abdul Kader

Question 1:

Please cross the domain/discipline that would best describe you being a representative of:

☒ Project Management ☐ Business Process Reengineering ☐ Other

Question 2:

Please indicate which area best describes your affiliation:

☐ University Sector ☒ Corporate Sector ☐ Both

Question 3:

Please indicate your perception of the research and the P^2OE^2M model presented. Please consider aspects such as domain knowledge and value contribution.

Good insights relating to change Fatigue and the readiness of successfully implementing re-engineering projects

Model gives good structure/considerations for project start up and not just re-engineering project.

PHD Thesis Presentation Feedback Survey

29 October 2014

Presented by: Imtiaz Abdul Kader

Doctoral Student at the University of Witwatersrand

Dear Presentation Invitee

Thank you for accepting and attending the presentation that was hosted by Imtiaz Abdul Kader, a doctoral student of the Engineering and Built Environment Faculty at the University of Witwatersrand. The presentation covered a brief overview of the research journey and a detailed description of the Pre Project Organisation Environment Enablement Model (P^3OE^3M) which was propounded by the researcher as a management approach, which if applied, would improve the success of an executed BPR project within the organisation and more specifically within the researched context of a financial institution.

As part of the presentation I respectfully request a few more minutes of your time, in order to provide feedback on a few aspects covered by the feedback questionnaire that follows. Please note that no personal information will be collected. The feedback will be based on understanding, firstly, which domain would you be best representative of, and secondly, to solicit feedback on the PHD research, specifically as it relates to the P^3OE^3M model described.

I look forward to your feedback.

Thank you.

Imtiaz Abdul Kader

Question 1:

Please cross the domain/discipline that would best describe you being a representative of:

☐ Project Management ☒ Business Process Reengineering ☐ Other ☐

Question 2:

Please indicate which area best describes your affiliation:

☐ University Sector ☐ Corporate Sector ☐ Both

Question 3:

Please indicate your perception of the research and the P^3OE^3M model presented. Please consider aspects such as domain knowledge and value contribution.

This is very interesting approach and I think it fills a major gap in the Plan-do-check-Act model for the Deming wheel.

PHD Thesis Presentation Feedback Survey

29 October 2014

Presented by: Imtiaz Abdul Kader

Doctoral Student at the University of Witwatersrand

Dear Presentation Invitee

Thank you for accepting and attending the presentation that was hosted by Imtiaz Abdul Kader, a doctoral student of the Engineering and Built Environment Faculty at the University of Witwatersrand. The presentation covered a brief overview of the research journey and a detailed description of the Pre Project Organisation Environment Enablement Model (P^2OE^2M) which was propounded by the researcher as a management approach, which if applied, would improve the success of an executed BPR project within the organisation and more specifically within the researched context of a financial institution.

As part of the presentation I respectfully request a few more minutes of your time, in order to provide feedback on a few aspects covered by the feedback questionnaire that follows. Please note that no personal information will be collected. The feedback will be based on understanding, firstly, which domain would you be best representative of, and secondly, to solicit feedback on the PHD research, specifically as it relates to the P^2OE^2M model described.

I look forward to your feedback.

Thank you.

Imtiaz Abdul Kader

ALASTAIR WALKER

Question 1:

Please cross the domain/discipline that would best describe you being a representative of:

☐ Project Management ☐ Business Process Reengineering ☒ Other CONSULTANT

Question 2:

Please indicate which area best describes your affiliation:

☐ University Sector ☒ Corporate Sector ☐ Both

Question 3:

Please indicate your perception of the research and the P^2OE^2M model presented. Please consider aspects such as domain knowledge and value contribution.

It seems to me that we know what is required is well known. The problem appears to be that the key players either do not know these key ~~the~~ 'truths', or choose to ignore them. Office ... spiral ...

PHD Thesis Presentation Feedback Survey

29 October 2014

Presented by: Imtiaz Abdul Kader

Doctoral Student at the University of Witwatersrand

Dear Presentation Invitee

Thank you for accepting and attending the presentation that was hosted by Imtiaz Abdul Kader, a doctoral student of the Engineering and Built Environment Faculty at the University of Witwatersrand. The presentation covered a brief overview of the research journey and a detailed description of the Pre Project Organisation Environment Enablement Model (P^2OE^2M) which was propounded by the researcher as a management approach, which if applied, would improve the success of an executed BPR project within the organisation and more specifically within the researched context of a financial institution.

As part of the presentation I respectfully request a few more minutes of your time, in order to provide feedback on a few aspects covered by the feedback questionnaire that follows. Please note that no personal information will be collected. The feedback will be based on understanding, firstly, which domain would you be best representative of, and secondly, to solicit feedback on the PHD research, specifically as it relates to the P^2OE^2M model described.

I look forward to your feedback.

Thank you.

Imtiaz Abdul Kader

Question 1:

Please cross the domain/discipline that would best describe you being a representative of:

☐ Project Management ☐ Business Process Reengineering ☒ Other IT. SOFTWARE ENGINEERING

Question 2:

Please indicate which area best describes your affiliation:

☐ University Sector ☒ Corporate Sector ☐ Both

Question 3:

Please indicate your perception of the research and the P^2OE^2M model presented. Please consider aspects such as domain knowledge and value contribution.

- WELL ARTICULATED
- GOOD PRESENTATION POLISH MATERIAL
- Q
- HOW WILL THE POEM MODEL BE APPLIED TO A/C AGILE ORGANISATIONS?

Ulram l'Vegerson Ulram@catrica.com
Cell: 0836552408

PHD Thesis Presentation Feedback Survey

29 October 2014

Presented by: Imtiaz Abdul Kader

Doctoral Student at the University of Witwatersrand

Dear Presentation Invitee

Thank you for accepting and attending the presentation that was hosted by Imtiaz Abdul Kader, a doctoral student of the Engineering and Built Environment Faculty at the University of Witwatersrand. The presentation covered a brief overview of the research journey and a detailed description of the Pre Project Organisation Environment Enablement Model (P^2OE^2M) which was propounded by the researcher as a management approach, which if applied, would improve the success of an executed BPR project within the organisation and more specifically within the researched context of a financial institution.

As part of the presentation I respectfully request a few more minutes of your time, in order to provide feedback on a few aspects covered by the feedback questionnaire that follows. Please note that no personal information will be collected. The feedback will be based on understanding, firstly, which domain would you be best representative of, and secondly, to solicit feedback on the PHD research, specifically as it relates to the P^2OE^2M model described.

I look forward to your feedback.

Thank you.

Imtiaz Abdul Kader

Question 1:

Please cross the domain/discipline that would best describe you being a representative of:

☐ Project Management ☐ Business Process Reengineering ☐ Other Consulting / Research

Question 2:

Please indicate which area best describes your affiliation:

☐ University Sector ☐ Corporate Sector ☒ Both

Question 3:

Please indicate your perception of the research and the P^2OE^2M model presented. Please consider aspects such as domain knowledge and value contribution.

- some influences can't be mitigated – does the model cater for such constraints?
- does the model consider project scale?
- does the model consider the likelihood of the estimate being right?

PHD Thesis Presentation Feedback Survey

29 October 2014

Presented by: Imtiaz Abdul Kader

Doctoral Student at the University of Witwatersrand

Dear Presentation Invitee

Thank you for accepting and attending the presentation that was hosted by Imtiaz Abdul Kader, a doctoral student of the Engineering and Built Environment Faculty at the University of Witwatersrand. The presentation covered a brief overview of the research journey and a detailed description of the Pre Project Organisation Environment Enablement Model (P^2OE^2M) which was propounded by the researcher as a management approach, which if applied, would improve the success of an executed BPR project within the organisation and more specifically within the researched context of a financial institution.

As part of the presentation I respectfully request a few more minutes of your time, in order to provide feedback on a few aspects covered by the feedback questionnaire that follows. Please note that no personal information will be collected. The feedback will be based on understanding, firstly, which domain would you be best representative of, and secondly, to solicit feedback on the PHD research, specifically as it relates to the P^2OE^2M model described.

I look forward to your feedback.

Thank you.

Imtiaz Abdul Kader

Question 1:

Please cross the domain/discipline that would best describe you being a representative of:

☐ Project Management ☐ Business Process Reengineering ☒ Other BENEFIT REALISATION

Question 2:

Please indicate which area best describes your affiliation:

☐ University Sector ☐ Corporate Sector ☒ Both

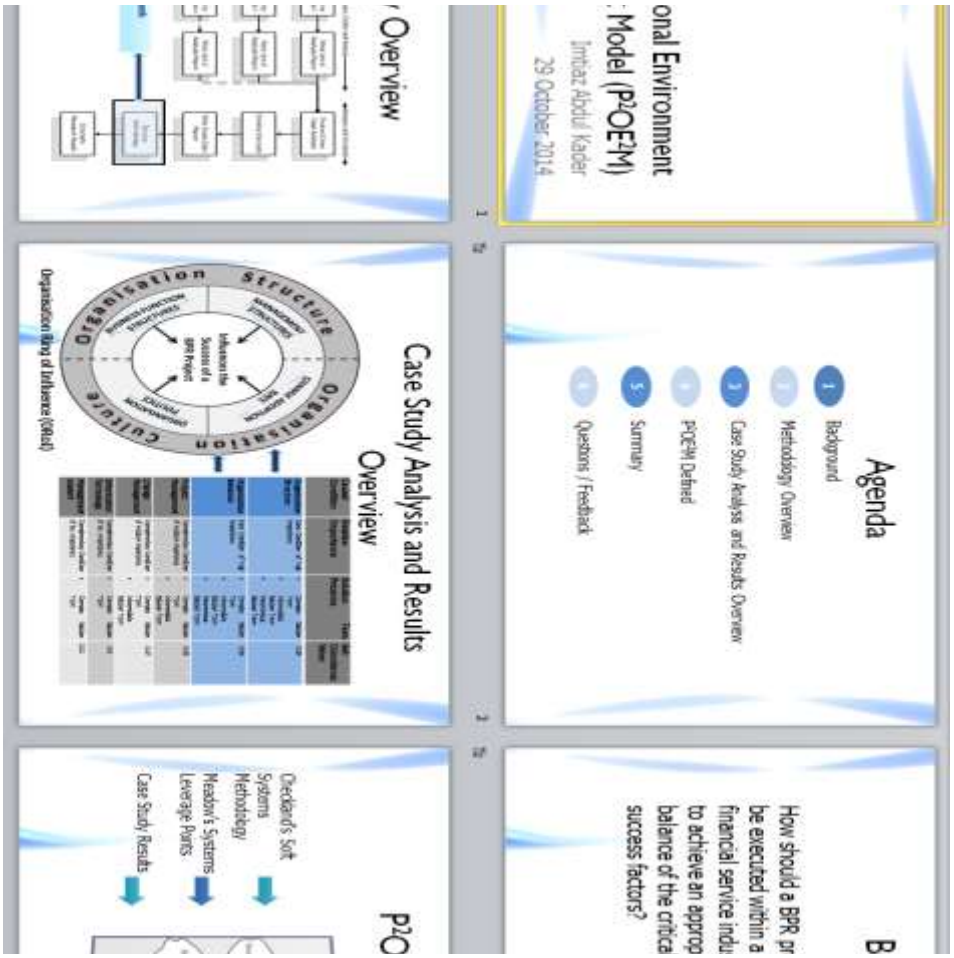
Question 3:

Please indicate your perception of the research and the P^2OE^2M model presented. Please consider aspects such as domain knowledge and value contribution.

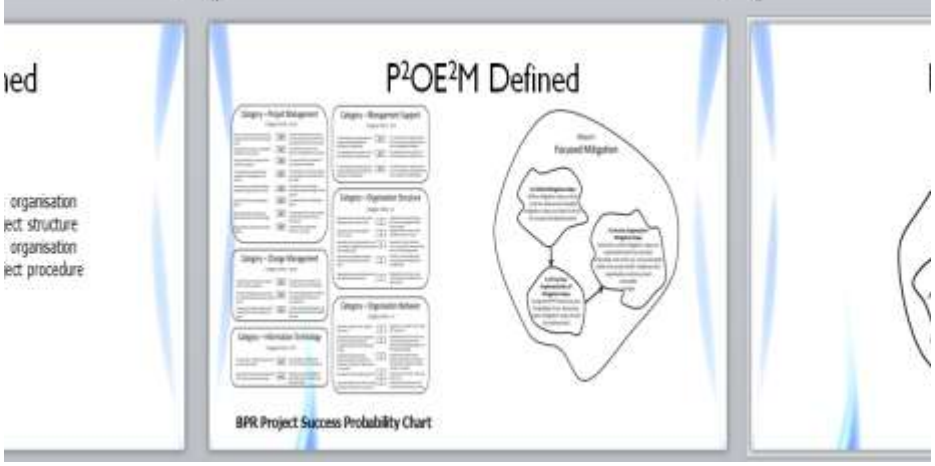
1. INTERESTING, MORE BROADLY APPLICABLE THAN B/R.
2. ~~MAY BE INSTITUTIONAL KNOWLEDGE LACKS & COMPLIANCE~~ AFTER
3. ~~ENSURE THAT THE DYNAMIC ENVIRONMENT REQUIRED~~ ARE FED BACK INTO THE PROJECT - CHANGES PREDICTISTIC
4. SHORT CYCLES, RATHER SMALLER INTERDEPENDANT PROJECTS MAY BE THE FUTURE. DOES POEM SCALE TO DEAL WITH THIS

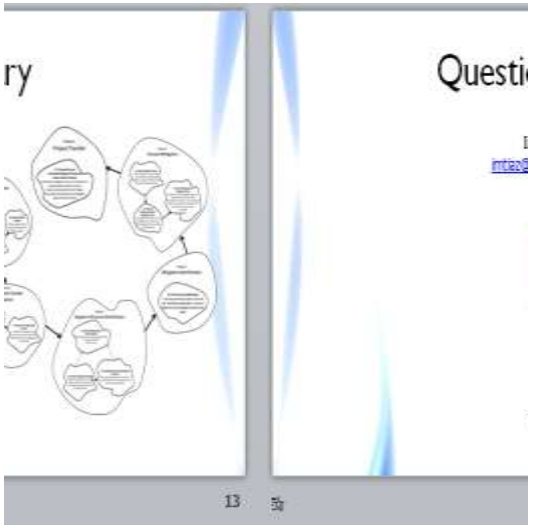
Appendix N: Presentation Slides

The following screen images provide the layout and content of the slides that were used at the presentation held at The University of the Witwatersrand on the 29th October 2014




P²OE²M Defined
Organisation Context Diagram Example
7
8


P²OE²M Defined
BPR Project Success Probability Chart


13

Appendix O: Published Articles and Associated Feedback

During the course of the research the Researcher published three articles which focused on the influence that Organisational Behaviours and Structures have on the outcomes of executed BPR projects. These articles were published on the http://www.BPMInstitute.org web domain. The links are:

http://www.bpminstitute.org/resources/articles/business-politics-projects-success-games-executives-play

http://www.bpminstitute.org/resources/articles/organization-structures-does-it-impact-project-success

http://www.bpminstitute.org/resources/articles/organisation-ring-influence

The articles are also contained below with associated feedback that was received via the website article comments section.

First Article:

Business Politics Before Projects Success: The Games Executives Play

Business Politics, Organisational Politics, Workplace Politics, irrespective of what noun you place in front of the word "Politics", an association can be drawn that there will be some decisions taken within organisations that are based on robust debates that are based on biased agenda's and contrasting behaviours and personalities. Belsky G and Gilovich T in their book, "Why Smart People Make Big Money Mistakes", infers that it is human nature to make decisions based on our personalities, self-motivated objectives, ego's, peer pressure, fear and regret irrespective of the irrationality of the outcome. The inference can be generalised against any decisions we as individuals need to make and is supported by Belsky G and Gilovich T when they succeeded statements made in their book with, "financial and or otherwise".

During my tenure, within a large financial institution, being accountable for the delivery of fairly large Business Process Reengineering (BPR) projects, I found myself within the context of a matrix type management structure where successful BPR projects where considered to be a myth. So, the question I posed to myself was; "Why is that so?." Before moving towards an answer to this question a brief understanding of business politics is required, furthered by a case study example as to the prevalence and impact in a matrix management organisation structure.

A definition of business politics can be found in various resources having minor variances' however all these definitions propound a central theme based upon the people within the organisation putting forward their own convictions, agenda's and ego's irrespective of whether it has a negative impact towards the organisation's performance or not.

Now why would this type of behaviour impact projects negatively in a matrix type management structure? In my experience I would affirm that it simply comes down

to the reason that in a matrix management structure you have people reporting to various managers to deliver and or achieve the same product/outcome.

The context in where the aforementioned statements prove themselves true is at an executive level where strategy is defined and executed and where decisions have a direct impact on the BPR projects conducted within an organisation. Let us look at a real world example which will provide a deeper context as to why I affirm the aforementioned statements.

The example revolves around a major BPR project which was carried out within a Global Corporate and Investment Bank. The project's aim was to realign the organisation's strategy from having disparate Customer/Contact Centres towards implementing a consolidated Customer/Contact Centre. As you can imagine this was quite a huge initiative requiring huge investment which would incorporate a swarm of stakeholders across numerous geographies. The key driving point was the swarm of stakeholders which created numerous decision points, wherein no single individual was accountable for a decision but rather creating collaborative accountability for decision making.

There were ultimately four executives accountable for approving any decision inclusive of funding, scoping and execution approach. The executive groups were as follows:

- *Line Executive: Accountable for the project resources, inclusive of human capital, BPR tools and Continuous Improvement Methodologies (for example: Six Sigma and Lean)*
- *Executive Sponsor: Accountable for the funding and scope of the project*
- *Business Operations Executive: Accountable for the funding and scope of the project*
- *Business Strategy Executive: Accountable for the funding and scope of the project*

Reading the above, it is clear that there would be conflict when it came to funding and scope; however any decision that needed to be made required all five approvals. A single conflict point was easier to manage as you only had to influence one outcome over another; however multiple conflict points were next to impossible to manage as there were too many viewpoints in play. Over and above the conflicting viewpoints that were in play, the project management had to also contend with constantly changing viewpoints expounded by the corridor conversations held by the executives – be it in isolation to the other executives or in persuasive collusions.

One of the key success factors in executing a BPR project is to have strong Executive Management support. This key success factor was one of the major failure points on the project, and was mainly attributed to business politics. The Business Operations Executive had a very strong technical background and did not support BPR projects. Instead the executive believed that software development was the silver bullet to fix all the business unit's financial woes. This led to much collusion happening between the executives that eventually resulted – after 6 months - in only the Line and Strategy Executive supporting the project. There were many other similar examples around funding and scope agreement.

To summarise: the outcome of the Executives behaviour resulted in 9 months' worth of work being stopped which included many pilots that were aimed at proving BPR concepts, and the development of numerous Project Charters and Business Cases which were presented at various Investment Committees for funding and

scope approvals. Needless to say the staff attrition in the BPR Business Unit, particularly the senior management, was close to 90%, citing business politics as a main reason for leaving the environment. The completion rate of BPR projects executed within the organisation's business unit was in a ratio of 1:4 – namely only 20% of projects executed could have been considered completed.

In conclusion business politics has a major implication to the success of executing BPR projects and should always be considered when planning for stakeholder management. Organisations should also strive to create an environment that is conducive to project management structures thereby limiting multiple stakeholders accountable for approving projects once initially approved to go ahead. The ideal would be to have a single accountable stakeholder for decision-making that would drive the interest of the organisation after the investment committees have initially prioritised projects, allocated funding and determined scope at an organisation level.

Comments: (Commenter names were left ou as no permission was obtained to include in the thesis, however this can be viewed via the website for confirmation)

"*Thanks Imtiaz for bringing out a very important discussion point. I feel, if Business Decisions are based on Functional Architecture the problem of Business Politics will always be there, as people and decision makers will do... what you have pointed out. Perhaps, it is time now that, the desired outcomes, define the processes and functions, forcing the decision makers to take decisions in business interest. Though, some companies are already following this approach, but way to go...."*

Second Article:

Organisation Structures: Do They Impact Project Success?

In my previous article "Business Politics before Projects Success: The Games Executives Play," I propounded a view which stated that a Business Process Reengineering (BPR) project's success or failure is highly influenced by a project having multiple accountable executives driving decisions on a project. In this article I will expand on this view by focussing on the concept of Organisation Structures and their influential impact on the BPR project domain.

Many definitions of Organisation Structures exist from various sources, however for the purposes of this article I will summarise and reconstruct the definition as follows:

"Organisation Structure refers to the lines of authority that articulate the controlling of decisions taken and the distribution of type of work performed based on the core purpose and strategic intent of the organisation."

The first part of the definition "lines of authority…type of work performed," is supported by the various forms of organisation structures as defined by Henry Mintzberg's, "Structure in 5's." Mintzberg classified five types of structures namely; Simple Structure, Machine Bureaucracy, Professional Bureaucracy, Divisionalised Form and Adhocracy. Following a brief elaboration of the organisation structure types the impact to BPR projects will be highlighted.

In the Simple Structure format, also known as Entrepreneurial, there exists a strong vertical line of authority and decision making. No formal structures exist for performance of work and or support functions.

Machine Bureaucracy has very formal structures wherein lines of authority are functionally based. Decisions and work performed are also governed by these functional groups in their respective functional spaces namely; Sales, Product, Marketing etc.

Professional Bureaucracy is different to Machine Bureaucracy in that the decision making power for the functional lines of authority are distributed across the vertical lines due to the use of professionally skilled individuals and standardised work execution approaches. Machine and Professional Bureaucracy organisations are similar in nature to the commonly known Functional type organisation.

The Divisionalised Form, similar to the Divisional type organisation, exists in large organisations wherein many divisions are created across, product, geography and market domains to perform related work. Authority and reporting lines span across levels that are accountable for strategy and operations. This structure also leads to duplication of work if common areas such as Human Resources and Information Technology exist independently within the operational areas of the organisational divisions.

The Adhocracy type classified by Mintzberg is of particular interest, as is the Matrix type of organisation wherein aspects of Functional and Divisional are selected to create the organisation structure. The Adhocracy organisation type is an adaptive type of structure which is influenced by the changing internal and external environments as well as any changes in organisation strategy. A Project organisation structure is very similar in nature to Mintzberg's Adhocracy as no two projects are similar and structures are determined by the project objectives and execution environments.

This leads us to the pinnacle of our discussion which relates to the second part of our aforementioned Organisation Structure definition, "core purpose and strategic intent of the organisation". Working in large corporates wherein the Matrix Organisation Structures exist I found that multiple lines of reporting and authority overlap one another creating a grid of complexity that is not supportive of executing BPR projects. One of the reasons' being the none existence of a single individual accountable for decision making as multiple stakeholders across various operational and strategic levels engage in business politics influencing the success or failure of the project. Another very important reason is that many corporate organisations core purpose is not in executing BPR projects; in fact this is a "business unusual" activity, however executing BPR projects do enable strategic intentions such as cost reduction and or service performance improvement.

Looking back at Mintzberg's organisation structure classifications an assertion can be put forward that an organisation would structure themselves in accordance to performing their core purpose. Unfortunately, as mentioned earlier, the core purpose of most corporate organisations is not in executing BPR projects yet practical experience has shown that this core purpose enabling structure is transferred into the execution of BPR projects. At this point clarification is required around what I mean by the execution of BPR projects. It is not referring to execution in the form of continuous improvement project techniques and or methods like Six Sigma and LEAN, but rather to how decisions are taken on a project and how authority and reporting lines are determined on human capital used within projects. It is also imperative to note that I refer to enterprise BPR type projects hence the influential factor of organisational structures.

As alluded to before, the success of an enterprise wide BPR project is influenced by business politics as well as the authority and reporting lines created to support an organisation structure type. Using the above point a strong case can be built for

having independent BPR project execution structures that are created to mitigate multiple decision points and multiple authority and reporting lines. This then leads us to the conclusion that organisations should have a core purpose enabling organisation structure which supports an integrated structure that enables the successful delivery of enterprise BPR projects. This is a similar yet different view of Mintzberg's Adhocracy form of organisation structure, wherein the adaptability comes in the form of having an independent entity within an organisation that is singularly accountable for decisions and human capital directly employed and or seconded for the execution of the BPR projects, thereby mitigating the strong influence of business politics and authority and reporting lines on an enterprise BPR project.

Comments: (Commenter names were left ou as no permission was obtained to include in the thesis, however this can be viewed via the website for confirmation)

"A really great article and key insights. I like the birds eye view on BPR from the ground level and the political drivers and governance at the executive/ senior management level. Its about time we start talking about eradicating the discrepancies between structure, governance and change. Thanks for sharing, Imtiaz Abdul Kader."

"Great to have your recap of Mintzberg. My comment here is inconclusive (intentionally). More suggestive. A project itself is, in essence, a micro-organization. The project organization is a supplier to a larger entity. The larger entity is a client. The client can be a "community" even more likely than it is another "organization". The structure of the micro-organization called "project" is essentially an engineering structure, and therefore would be managed that way.(This intends to include consideration of newer engineering paradigms, but it is still engineering.) Engineering and execution are not synonyms, but of course the role of supplier means that the project will be subject to performance assessments that view its competency in its role. The issue you are (I think) focused on is the set of barriers that prevent the client from accepting the product of the supplier. Ordinarily, the reasons for that are a failure of the "deliverable" to comply to the client's requirements, either substantively, or contractually. Since acceptance is predicated on the demand side, and since on the demand side requirements definition is more critical to success than production, the most significant "decision making as multiple stakeholders across various operational and strategic levels" is in the reconciliation of defined requirements before the project execution begins its production phase. Barriers to reconciliation of requirements can certainly include politics, as well as culture, knowledge and dissonance between strategies. But I believe you mainly tried to highlight the phenomenon that the client actually could not agree to form the supplier micro-organization called "project" with enough autonomous function and governance to succeed as a supplier (due to inadequacies of matrix management). I would argue that if the requirements were managed successfully, then the project is far more likely to acquire and keep the autonomy it needs within the terms of its contract to finally deliver. Reconciling requirements across matrixed management will call for people who have certain skills. (Again, no presumption of being conclusive here... more suggestive.)"

Third Article:

Organisation Ring of Influence

A famous quote, "Installing a Rolls Royce engine in a Hyundai can make it inoperable," (Russell Ackoff, 1999) as used to explain why improving parts of a system can be detrimental as opposed to improving the entire system, could also

be used to explain why you should consider improving Business Process Reengineering BPR project execution as part of an organisation in terms of how they operate and not just by focusing on the technical execution of a project in terms of the project lifecycle. In other words the "BPR Project System" is made up of the environment in which it is executed as well as the BPR project itself inclusive of its execution method, its team structure, its project objectives and execution deliverables.

As mentioned in my previous articles, projects are executed within an operating environment as established by the organisation in which the project is executed. This leads to the organisation influencing the outcome of a project be it positive or negative, therefore, in aiming to reduce failure of BPR projects by improving how we execute BPR projects. Consideration should be given to certain key principles that exist within an organisation as part of the entire "BPR Project System"

The key principles that I found to have a major influence on the execution of BPR projects within an organisation can be summarised as part of the Organisation Ring of Influence (ORoI) model, which I developed.

The ORoI is the output of 10 months field work observing the dynamics of BPR projects being executed within a dynamic organisation where a dominant matrix management structure existed. The following four factors were found to have a major influence on the outcome of the projects studied:

- *The way the organisation management was structured*
- *The stability of the organisation functional and or operations structure*
- *The influence business politics played in project decision making*
- *The capability of an organisation to adopt the business change at an acceptable rate*

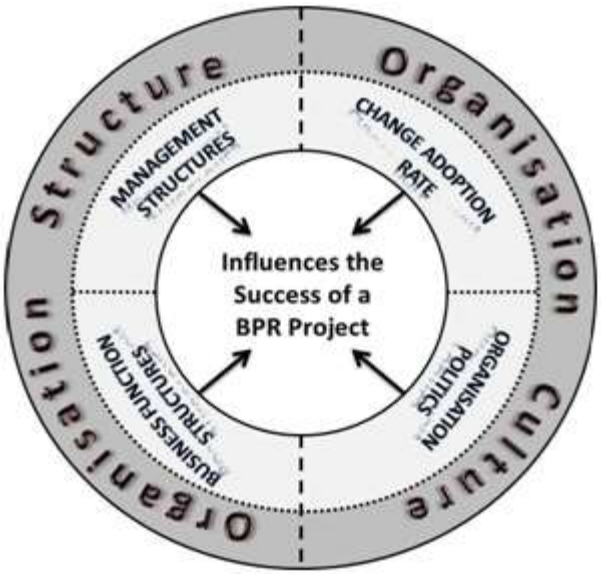


Figure 1: Organisation Ring of Influence (OROI)

The model, as depicted by Figure 1: Organisation Ring of Influence (OROI), comprises of two hierarchy's differentiating between the Organisation Structure, its associated factors and the Organisation Culture with its associated factors. The factors are briefly explained as part of the narratives below.

Organisation/Business Politics, an element of Organisation Culture, is defined as "The pursuit of individual agendas and self interest in an organisation without regard to their effect on the organisation's efforts to achieve its goals" (1). From this definition it is easy to see how this behaviour, forming part of the organisation culture, can influence the outcome of a BPR project.

Change Adoption Rate, a further element of Organisation Culture, is not to be confused with Resistance to Change. The latter is concerned with the deliberate and conscious decision of impacted stakeholders not to readily accept any organisation change. Change Adoption Rate, which can be influenced by resistance to change, concerns the ability of an organisation in terms of period taken before any change is implemented and standardised within the organisation.

Business Function Structure, an element of Organisation Structure, influences the success of a BPR project due to the value chain process philosophy. Process value chains can start in the Product Design department and end in the Sales department which results in multiple process owners, contrasting process understanding and disparate continuous improvement projects (2). This phenomenon can result in reengineering parts of a single value chain through different teams and different executive sponsors, without understanding the impact to the holistic nature of the value chain itself (2). All parts of a process, if isolated and reengineered could result in the value chain being left worst off than it was before (2).

Organisation structure also determines Management structures, which is a tricky one to get to grips with as to why this would influence the success of a BPR project. During the case study it was observed that a Matrix type management structure can support a BPR project by having many senior stakeholders focused on a single goal whilst on the other hand it could also negatively impact a BPR project by having many senior stakeholders with different goals trying to influence the direction of the project. Matrix management also propounds many points of accountability and decision making, which was found to negatively impact the payments project.

To conclude the ORoI contains elements that are brought into the project simply as part of inheritance due the project being executed within the organisation. The ORoI elements are currently not being prioritised and considered as part of the execution of the BPR projects yet due to their influence I would recommend that they be considered when embarking on any BPR project.

1. Business Dictionary. Organizational-Politics. www.businessdictionary.com. http://www.businessdictionary.com/definition/organizational-politics.html.

2. Dr Russell Ackoff. Systems Based Improvement with Russell Ackoff. Systems Wiki. http://www.systemswiki.org/index.php?title=Systems_Based_Improvement_with_Russell_Ackoff.

Comments: (Commenter names were left ou as no permission was obtained to include in the thesis, however this can be viewed via the website for confirmation)

"This is a new wave of thinking about BPR and I found it very insightful. Thinking back to previous BPR projects as always the organisational culture is given very little thought to and always legs behind the technology and process improvement elements.
Even though the success of BPR implementations are highly dependent on the

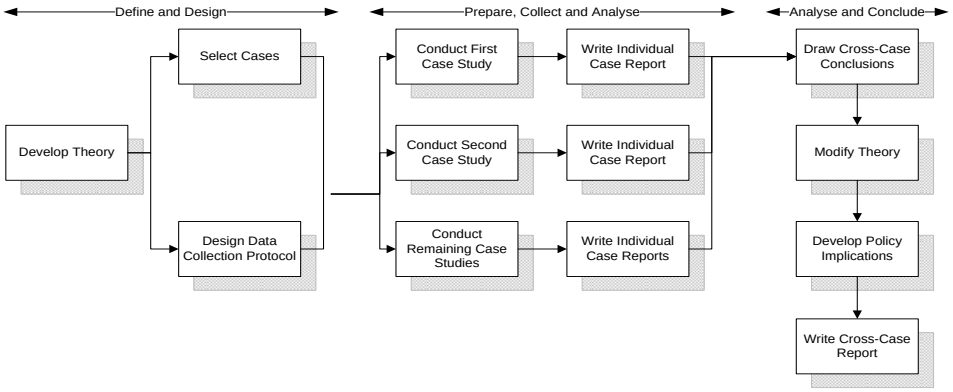
marriage between organisational strategies and people buy-in we seldom take the time required to truly understand the dynamics of these influences. The OROI model you've depicted highlights the importance of the voice of the key organisational structures in churning a faster change adoption rate"

"Imtiaz, this is indeed a new way of thinking. While most articles/literature do not deal with Organizational politics, am glad to see you mentioning it in a new model. Two things as we know, Organization structures are faster to change/re-build; however, Organization culture(including the Politics part of it) does not change that faster as culture takes much longer to build and change. Again, culture is made up of people in the organization and "their way of doing things". The other thing you bring in to the discussion is the Stability of the structures. As we know again, this heavily influences the success rate of all (not only BPR) projects in any given organization, especially in large ones."

"This is very good stuff. I completely agree with the OROI model and particularly regard - Change Adoption Rate as the key factor for success of BPR. Good One!"

Appendix P: YIN, 2009, Case Study Method

Source: Yin 2009



Appendix Q: Sufficiency Analysis Detail View

Conjunctural/Causal Conditions	Consistency	Coverage	0.75 Consistency Benchmark is Met	Veristic Threshold (2 Cases) is Met
PM*CM*MS*IT*OS*OB	0.71	0.50	No	
PM*MS*IT*OS*OB	0.71	0.50	No	
PM*CM*MS*IT*OS	0.71	0.50	No	
PM*CM*MS*IT*OB	0.63	0.50	No	
PM*CM*MS*OS*OB	0.71	0.50	No	
CM*MS*IT*OS*OB	0.71	0.50	No	
PM*CM*IT*OS*OB	0.71	0.50	No	
PM*MS*OS*OB	0.71	0.50	No	
CM*MS*IT*OB	0.63	0.50	No	
PM*MS*IT*OB	0.63	0.50	No	
PM*MS*IT*OS	0.71	0.50	No	
CM*MS*OS*OB	0.71	0.50	No	
CM*MS*IT*OS	0.71	0.50	No	
PM*CM*OS*OB	0.75	0.60	Yes	Yes
PM*CM*IT*OB	0.63	0.50	No	
PM*CM*IT*OS	0.75	0.60	Yes	No
PM*IT*OS*OB	0.71	0.50	No	
PM*CM*MS*OB	0.63	0.50	No	
PM*CM*MS*OS	0.63	0.50	No	
PM*CM*MS*IT	0.63	0.50	No	
CM*IT*OS*OB	0.71	0.50	No	
MS*IT*OS*OB	0.71	0.50	No	
CM*MS*IT	0.63	0.50	No	
MS*IT*OB	0.63	0.50	No	
CM*MS*OS	0.63	0.50	No	
CM*MS*OB	0.63	0.50	No	
MS*IT*OS	0.71	0.50	No	
CM*IT*OS	0.75	0.60	Yes	No
CM*IT*OB	0.63	0.50	No	
CM*OS*OB	0.75	0.60	Yes	Yes
IT*OS*OB	0.71	0.50	No	
PM*CM*MS	0.50	0.50	No	
PM*CM*IT	0.67	0.60	No	
PM*CM*OS	0.70	0.70	No	
PM*CM*OB	0.70	0.70	No	
PM*MS*IT	0.63	0.50	No	
PM*MS*OS	0.63	0.50	No	

Conjunctural/Causal Conditions	Consistency	Coverage	0.75 Consistency Benchmark is Met	Veristic Threshold (2 Cases) is Met
PM*MS*OB	0.63	0.50	No	
PM*IT*OS	0.75	0.60	Yes	No
PM*IT*OB	0.63	0.50	No	
MS*OS*OB	0.71	0.50	No	
PM*OS*OB	0.75	0.60	Yes	Yes
MS*OB	0.63	0.50	No	
IT*OB	0.63	0.50	No	
MS*OS	0.63	0.50	No	
IT*OS	0.75	0.60	Yes	No
MS*IT	0.56	0.50	No	
CM*OB	0.70	0.70	No	
CM*OS	0.70	0.70	No	
CM*IT	0.67	0.60	No	
CM*MS	0.50	0.50	No	
OS*OB	0.75	0.60	Yes	Yes
PM*OB	0.70	0.70	No	
PM*OS	0.70	0.70	No	
PM*IT	0.67	0.60	No	
PM*MS	0.50	0.50	No	
PM*CM	0.62	0.80	No	
OS	0.70	0.70	No	
OB	0.70	0.70	No	
IT	0.64	0.70	No	
MS	0.45	0.50	No	
CM	0.53	0.80	No	
PM	0.62	0.80	No	

Appendix R: Sufficiency Analysis of Negated fsQCA Matrix

Conjunctural/Causal Conditions	Consistency	Coverage	0.75 Consistency Benchmark is Met
PM*CM*MS*IT*OS*OB	0.29	0.13	No
PM*MS*IT*OS*OB	0.29	0.13	No
PM*CM*MS*IT*OS	0.29	0.13	No
PM*CM*MS*IT*OB	0.38	0.20	No
PM*CM*MS*OS*OB	0.29	0.13	No
CM*MS*IT*OS*OB	0.29	0.13	No
PM*CM*IT*OS*OB	0.29	0.13	No
PM*MS*OS*OB	0.29	0.13	No
CM*MS*IT*OB	0.38	0.20	No
PM*MS*IT*OB	0.38	0.20	No
PM*MS*IT*OS	0.29	0.13	No
CM*MS*OS*OB	0.29	0.13	No
CM*MS*IT*OS	0.29	0.13	No
PM*CM*OS*OB	0.25	0.13	No
PM*CM*IT*OB	0.38	0.20	No
PM*CM*IT*OS	0.25	0.13	No
PM*IT*OS*OB	0.29	0.13	No
PM*CM*MS*OB	0.38	0.20	No
PM*CM*MS*OS	0.38	0.20	No
PM*CM*MS*IT	0.38	0.20	No
CM*IT*OS*OB	0.29	0.13	No
MS*IT*OS*OB	0.29	0.13	No
CM*MS*IT	0.38	0.20	No
MS*IT*OB	0.38	0.20	No
CM*MS*OS	0.38	0.20	No
CM*MS*OB	0.38	0.20	No
MS*IT*OS	0.29	0.13	No
CM*IT*OS	0.25	0.13	No
CM*IT*OB	0.38	0.20	No
CM*OS*OB	0.25	0.13	No
IT*OS*OB	0.29	0.13	No
PM*CM*MS	0.50	0.33	No
PM*CM*IT	0.33	0.20	No
PM*CM*OS	0.30	0.20	No
PM*CM*OB	0.30	0.20	No
PM*MS*IT	0.38	0.20	No

Conjunctural/Causal Conditions	Consistency	Coverage	0.75 Consistency Benchmark is Met
PM*MS*OS	0.38	0.20	No
PM*MS*OB	0.38	0.20	No
PM*IT*OS	0.25	0.13	No
PM*IT*OB	0.38	0.20	No
MS*OS*OB	0.29	0.13	No
PM*OS*OB	0.25	0.13	No
MS*OB	0.38	0.20	No
IT*OB	0.38	0.20	No
MS*OS	0.38	0.20	No
IT*OS	0.25	0.13	No
MS*IT	0.44	0.27	No
CM*OB	0.30	0.20	No
CM*OS	0.30	0.20	No
CM*IT	0.33	0.20	No
CM*MS	0.50	0.33	No
OS*OB	0.25	0.13	No
PM*OB	0.30	0.20	No
PM*OS	0.30	0.20	No
PM*IT	0.33	0.20	No
PM*MS	0.50	0.33	No
PM*CM	0.38	0.33	No
OS	0.30	0.20	No
OB	0.30	0.20	No
IT	0.36	0.27	No
MS	0.55	0.40	No
CM	0.47	0.47	No
PM	0.38	0.33	No