# The Impact of Employee Ambidexterity on Organisational and Marketing Innovations:

## Organisational Context for *Exploiting* the Present and *Exploring* for the Future

**Oluseyi Moses Ajayi**

## A Doctoral Thesis

Submitted in partial fulfilment of the requirement for the award of

Doctor of Philosophy of

## Dedication

This research work is dedicated to the Almighty God, who is my Shepherd, the Giver of life, wisdom, knowledge and understanding.

## Acknowledgments

I would like to express my deepest gratitude and say a big thank you to my supervisor, Dr Sue Morton, for her time, support and guidance; her busy schedule never prevented her from painstakingly assessing my level of progress and offering the needed feedback during the course of this research journey. Her excellent supports have made me to appreciate both in value and in competence. I sincerely appreciate the scholarship award by the Innovative Manufacturing and Construction Research Centre, Loughborough University, in support of this study.

I would like to express my sincere gratitude to my wife, Olubusola Motunrayo Ajayi, for her love, her support and most importantly, her encouragement and prayers. I am also grateful to my mother, Mrs Tolulope Ajayi, and my entire family for all their supports. I say a big thank you to my son, Samuel Oluwasemilore Oluwadarasimi Ajayi, for your cooperation during the course of this study.

Special thanks go to Dr Yemi Ogunbiyi, Sir (Dr) Kesington Adebukunola Adebutu, Dr Tunde Soyemi, Mr and Mrs Somuyiwa, Mr. Dipo Onabajo, Prince Adeboye Osinoiki, Chief Yemi Ajayi, Mrs Grace Sangotola, Mr Olugbenga Ibikunle, Prince Taiye Onasegun, Dr Helen Wagner, David Chapman, and Chief Edward Ajayi for their encouragement and supports.

I want to appreciate Mr and Mrs Ayoyinka Mayomi, Mr and Mrs Dayo Awe, Mr Kayode Odunsaya, Adeola Osugo, Mr Ademola Olarinde, Mr and Mrs Tunde Alade, Mr Kehinde and Taiwo Akinsola, Pastor Adeola Osilesi, Pastor and Mrs Leke Adeboye, Mr Olaolu Sofade, Mr Ayodeji Sunday Ogunleye, Kayode Ugoh, Sogo Olokodana, Seun Owolabi, Motunrayo Sotayo, Brother Ewejobi Muyiwa, Brother Samuel Oluwole Afolabi, Mr and Mrs Sola Sofade, Brother Kunle Sangotola, Brother Femi Sangotola, Mr Oluwasayo Oshungbure, Engineer Chidi Jideonwo, Engineer Abiola Abe, Engineer Mrs M. O. Alade, Engineer Abbey Remigious, Mr Bisi Bammeke and Miss Bodunrin Dawodu for their supports and roles during the data collection phase of this study. My appreciation also goes to all the research participants for their time.

I want to acknowledge: (1) the support of Martin Ashby (Loughborough University Bristol Online Surveys Tool Administrator), Richard Buxton and Alun Owen of

Loughborough University Statistics Consultancy Service; (2) the administrative supports of Jo Mason, Bhavna Mistry and Chris Harris; and (3) the IT support of Clive Turner, Darren Smith and Andy Price of Wolfson School, towards the success of this research.

Finally, I would like to acknowledge the moral support and the word of encouragement of Pastor Clement Oladoye, Pastor Chuks Duru, Pastor Sam Oluwarinu, Very Revd Olorunmade, Mr and Revd Mrs Sosanwo, Mr and Mrs Adeleke, Pastor and Mrs Jeshurun Chukwu, Dr and Mrs Ola, Mr and Mrs Obadina, Dr Deji Akiwowo, Brother Kehinde Alade, Brother Samuel Durugo, Brother Ejike Omaba, Mr and Mrs Samuel Ogunkolade, Brother Wale Adesina, Bro Obamayowa Olomolaiye, Sister Kerri Wallace, Dr and Mrs Phil Ogun, Dr Tosin Otulana, Sister Taiwo Gisanrin, Sister Sopriye Dodiyi-Manuel and all the members of RCCG, Cornerstone Parish, Loughborough, United Kingdom. You all made this research journey a fulfilling one.

# Abstract

Research studies on innovation tend to focus more on Process and Product Innovations (PPIs), while both Organisational and Marketing Innovations (OMIs) have been under-researched. The lack of prior research on these non-technological innovations has been attributed to poor data availability. Theoretical opinions show that OMIs could be necessary prerequisites needed to optimally utilise and deploy these PPIs.

Organisational Ambidexterity (OA) has emerged to be crucial in achieving long-term organisational success. Ambidexterity in an organisational context refers to the ability to concurrently exploit current competitive advantage and explore new opportunities with equal dexterity. For firms to remain competitive and adaptive to continuous change in the business environment, OA has been noted as a necessary attribute, but research on ambidexterity at the individual level of analysis is limited. There is a lack of understanding of how individual ambidexterity at the lower-levels of the organisation affects the overall ambidexterity of the organisation. This research explores organisational context antecedents of OMIs capabilities; Organisational and Employee Ambidexterity, and identifies how individual employees in Small and Medium-sized Manufacturing and Service Organisations could contribute to the capability of their organisation to concurrently *exploit* present market opportunities and *explore* new opportunities, towards sustaining their competitive advantage.

This study involves a two-phase sequential mixed methods design beginning with a qualitative exploratory research involving 15 in-depth Nigerian-based interviews. The first phase facilitated preliminary assessment of organisational context, measured by the Cameron and Quinn's Organisational Culture Assessment Instrument. This phase also aided the understanding of factors that promote OMIs capabilities and the development of themes used to design the survey instrument for the second phase. The second phase involved a quantitative study of 398 shop-floor and 202 managerial staff from Small and Medium-sized Nigerian Manufacturing and Service Organisations. This phase was characterised by descriptive and inferential statistics through Structural Equation Modelling. This aided identifying the organisational context that promotes Employee Ambidexterity (EA) and the relationships between EA; OA; and OMIs' capabilities.

Drawing upon information-rich evidence, this study identified enablers that could promote EA; OA; OMIs; effective innovations; and sustainable organisational growth. Statistical evidence from the research findings shows that Organic Structure and Knowledge Sharing, plus a Flexible and Family-like Organisational Culture:

1. enhances Employee Ambidexterity and Level of Engagement;
2. improves employees' contributions to OA, OMIs and SMEs' growth;
3. optimises the internal capabilities of SMEs in order to promote their sustainable growth;
4. enables SMEs to search for new market opportunities and strengthen current market positions concurrently; and
5. promotes viable Manufacturing and Service SMEs that are needed to offset the prevalent public sector job losses.

A framework that relates: Individual and Organisational Ambidexterity; Organisational and Marketing Innovations capabilities; and Organisational Performance, has been identified in this study. While Marketing Innovation capability and Exploitative Orientation of Ambidexterity target the short term organisational benefits, Organisational Innovation capability and Explorative Orientation of Ambidexterity address the long term competitive advantage of the organisations. Besides advancing literature on the study of Organisational Ambidexterity by combining the individual level of analysis with the organisational level of analysis, this study identifies frameworks that promote effective innovation and sustainable organisational performance through shop floor employees' contributions to Organisational Ambidexterity and OMIs in SMEs. Outcomes of this research have been eye-openers for the case organisations on how to optimally utilise their resources (people, materials, knowledge, technology and other assets) to achieve sustainable growth and long term success.

**Keywords:** Organisational Innovation, Marketing Innovation, Organisational Ambidexterity, Contextual Individual Ambidexterity, Organisational Context, Small and Medium-sized Manufacturing and Service Organisations, Organisational Performance

# List of Publications, Conferences and Poster Presentation

## Journals

**O. M. Ajayi and S. C. Morton** (Manuscript ID: JEM-12-0199). *Exploiting the Present and Exploring for the Future: Do Shop-Floor Employees have any Contributions? A Literature Review*, Journal of Engineering Manufacture (in review)

**O. M. Ajayi, Morton, S. C.; Helen, T. W. and Burns, N. D.,** (Manuscript ID: IJPE-D-12-00397), *Product Mix Decision in Close Constraints Scenarios: Meeting the Market Demands and the Desired Throughput*, International Journal of Production Economics (in review)

## Conferences (Refereed)

**O. M. Ajayi and S. C. Morton, 2012**, *Understanding the Organisational Context and the Impact of Contextual Individual Ambidexterity on Organisational Ambidexterity, Organisational and Marketing Innovations in Nigerian SMEs*, British Academy of Management 2012 Conference Proceedings, Management Research Revisited: Prospects for Theory and Practice, 11th -13th September, Cardiff University.

**O. M. Ajayi and S. C. Morton, 2013**, *Exploiting the Present and Exploring for the Future: Investigating the Roles of Employee Ambidexterity and non-Technological Innovations in Small and Medium-sized Manufacturing and Service Organisation,* Loughborough University Research Staff Conference 2013, Research that Matters, 7th March, 2013, Loughborough University.

**O. M. Ajayi and S. C. Morton, 2013**, *Organisational Context for Employee Ambidexterity and Employee Engagement: Towards Performance Improvement in Small and Medium-sized Manufacturing and Service Organisations*, British Academy of Management 2013 Conference, Performance Management Track, Managing to Make a Difference, 10th-12th September, 2013, Liverpool University

**O. M. Ajayi and S. C. Morton, 2013**, *Exploring the Enablers of Organisational and Marketing Innovations in SMEs: Findings from South-western Nigeria,* British Academy of Management 2013 Conference, Innovation Track, Managing to Make a Difference, 10th-12th September, 2013, Liverpool University

## Other Conference

**O. M. Ajayi and S. C. Morton, 2011**, Organisational and Marketing Innovations: *Achieving Effective Innovations in Small and Medium-sized Enterprises,* Presentation at Research Student Conference, Wolfson School of Mechanical and Manufacturing Engineering, Loughborough University, Loughborough, UK, 14-16 June 2011

**Poster Presentation**

**Ajayi, O. M., 2013**, *Exploiting the Present and Exploring for the Future: Investigating the Roles of Employee Ambidexterity and non-Technological Innovations in Small and Medium-sized Manufacturing and Service Organisation*, Loughborough University Research Staff Conference 2013, Research that Matters, 7th March, 2013, Loughborough University

**Ajayi, O. M., 2012**, Poster Presentation, *Understanding the Organisational Context and the Impact of Contextual Individual Ambidexterity, Organisational and Marketing Innovations in Nigerian SMEs*, Research Student Conference, Wolfson School of Mechanical and Manufacturing Engineering, Loughborough University, Loughborough, UK, 13th June 2012

**Ajayi, O. M., 2011**, Poster Presentation, *Technological Innovations in Nigerian Small and Medium-sized Enterprises: The Roles of Organisational and Marketing Innovations*, Research Poster Board for 2nd Year Students, Wolfson School of Mechanical and Manufacturing Engineering, Loughborough University, Loughborough, UK 3-7th October, 2011

# Table of Contents

Dedication ..... ii
Acknowledgments ..... iii
Abstract ..... v
List of Publications, Conferences and Poster Presentation ..... vii
Table of Contents ..... ix
List of Figures ..... xviii
List of Tables ..... xxi
Chapter 1 ..... 1
1 Introduction ..... 1
1.1 Research Background ..... 1
1.2 Effective Innovation and Growth of SMEs in Developing Economies ..... 2
1.3 Research Orientation on Innovation Types ..... 3
1.4 Research Orientation on Organisational Ambidexterity ..... 4
1.5 The Purpose Statement ..... 4
1.5.1 Research Aims ..... 5
1.5.2 Research Questions ..... 5
1.6 Selection of the Study Area: Manufacturing and Service SMEs in Nigeria ..... 6
1.7 Proposed Research Strategy ..... 8
1.8 Structure of the Thesis ..... 9
1.9 Summary of Chapter ..... 9
Chapter 2 ..... 10
2 Literature Review ..... 10
2.1 Small and Medium-sized Enterprises (SMEs) ..... 11
2.1.1 Defining SMEs ..... 11
2.1.2 SMEs and Innovation Process ..... 13
2.2 Obstacles to SME Growth and Entrepreneurship Development in Nigeria ..... 15
2.2.1 Some Recent Studies ..... 15
2.2.2 Classifying the Obstacles to Nigerian SME Growth ..... 17
2.3 Efficiency of Innovation Processes in SMEs ..... 20
2.4 Improving Innovation Activities in SMEs ..... 21
2.4.1 Information communication technology (ICT) ..... 21
2.4.2 Rivalry and competition ..... 22

2.4.3 Collaboration ..... 22
2.4.4 Innovation and total quality management ..... 22
2.5 The Innovation System ..... 23
2.6 Innovation and Competitive Advantage ..... 24
2.7 Dimensions and Types of Innovative Changes ..... 25
2.8 Classifying Innovation Types ..... 27
2.8.1 Product innovations ..... 28
2.8.2 Process innovations ..... 29
2.8.3 Organisational innovations ..... 29
2.8.4 Marketing innovations ..... 31
2.8.5 Soft and Hard Soft Components of Innovation Process ..... 32
2.9 Novelty in Innovative Changes ..... 33
2.10 The Innovation Framework ..... 34
2.11 Innovation in Product Development ..... 37
2.12 The Significance of the Soft Components of Innovation Process ..... 39
2.13 Organisational Ambidexterity ..... 41
2.13.1 Organisational Ambidexterity and SMEs ..... 46
2.13.2 Antecedents of Organisational Ambidexterity ..... 48
2.13.3 Organisational Ambidexterity and Firm Survival ..... 51
2.14 Summary of the Research Gaps ..... 55
2.14.1 Effective Innovations in SMEs ..... 55
2.14.2 Organisational and Marketing Innovations (OMIs) ..... 55
2.14.3 Contextual Individual Ambidexterity ..... 56
2.15 Relating the Research Questions to the Research Framework ..... 58
2.16 Developing the Research Hypotheses ..... 61
2.16.1 Organisational Context: Organisational Structure and OMIs ..... 61
2.16.2 Organisational Context: Organisational Structure and OA ..... 65
2.16.3 Organisational Context: Organisational Culture ..... 69
2.16.4 Organisational Context: Organisational Culture and OMIs ..... 72
2.16.5 Organisational Context: Organisational Culture, OMIs and OA ..... 74
2.16.6 CIA of the Managerial Employees and OMIs Capabilities ..... 75
2.17 Chapter Summary ..... 76
Chapter 3 ..... 77

3 Research Methodology ..... 77
3.1 Philosophical Assumptions and World Views ..... 79
3.1.1 Positivist Worldview ..... 80
3.1.2 Interpretive Worldview ..... 81
3.1.3 Critical Theory Worldview ..... 82
3.1.4 Participatory World View ..... 84
3.1.5 Pragmatist Worldview ..... 84
3.1.6 Philosophical Assumptions for Mixed Methods Research ..... 84
3.2 Three Main Strategies of Research Inquiry ..... 85
3.2.1 Quantitative Research Strategies ..... 85
3.2.2 Qualitative Research Strategies ..... 87
3.2.3 Mixed Methods Research Design Strategies ..... 88
3.3 Research Strategy Adopted for this Study ..... 89
3.3.1 Analysing the Research Problems and Questions ..... 90
3.3.2 The Explorative Research Phase ..... 94
3.3.3 The Analytical Research Phase ..... 101
3.4 Quantitative Research Design: Instrument Development ..... 108
3.4.1 The Research Constructs ..... 110
3.4.2 Managerial Staff Questionnaire ..... 111
3.4.3 Non-managerial Staff Survey ..... 117
3.5 Pretesting the Survey Instrument ..... 121
3.6 Ethical Issues ..... 123
3.7 Summary of Chapter ..... 124
Chapter 4 ..... 125
4 Qualitative Research Phase ..... 125
4.1 Background to the Process ..... 126
4.2 The Interviews ..... 128
4.3 Content Analysis ..... 129
4.4 Emerging Themes and Perspectives ..... 129
4.4.1 Informants' Perspectives on Organisation Innovation Capability ..... 129
4.4.2 Informants' Perspectives on Marketing Innovation Capability ..... 134
4.4.3 Other Emerging Perspectives ..... 138

4.4.4 Emerging Themes and Identified Antecedents to Organisational and Marketing Innovations Capabilities ..... 142
4.5 Organisational Culture Assessment of the Case Organisations ..... 145
4.5.1 Company A ..... 147
4.5.2 Company B ..... 148
4.5.3 Company C ..... 149
4.5.4 Company D ..... 149
4.5.5 Company E ..... 150
4.5.6 Company F ..... 151
4.5.7 Company G ..... 151
4.5.8 Company H ..... 152
4.5.9 Company I ..... 153
4.5.10 Company J ..... 153
4.5.11 Company K ..... 154
4.5.12 Company L ..... 155
4.6 Observations from the Culture Profiles ..... 155
4.7 Summary of Chapter ..... 158
Chapter 5 ..... 160
5 Quantitative Research Phase: Descriptive Statistics and Exploratory Factor Analysis ..... 160
5.1 Quantitative Data Collection ..... 160
5.1.1 Response Rate ..... 161
5.1.2 Data Screening ..... 162
5.1.3 Non-response bias ..... 162
5.2 Sample Characteristics and Descriptive Statistics ..... 166
5.2.1 Individual Attributes for Shop-floor Staff Survey ..... 166
5.2.2 Individual Attributes for Managerial Staff Survey ..... 169
5.2.3 Company Level Attributes for the Shop-floor Staff Survey ..... 173
5.2.4 Company Level Attributes for the Managerial Staff Survey ..... 174
5.3 Descriptive Statistics for the Variables in the Shop-floor Survey ..... 177
5.3.1 Employee Working Environment ..... 177
5.3.2 Employee Level of Engagement ..... 181
5.3.3 Shop-floor Employee Ambidexterity ..... 183

5.4 Descriptive Statistics for the Variables in the Managerial Survey ..... 186
5.4.1 Organisational Innovation Capability Variable ..... 187
5.4.2 Marketing Innovation Capability Variable ..... 188
5.4.3 Organisational Ambidexterity Variable ..... 189
5.4.4 Managerial Ambidexterity Variable ..... 190
5.4.5 Customer Engagement Variable ..... 191
5.4.6 Organisational Performance Variable ..... 192
5.5 Preliminary Data Analysis: Factor Analysis ..... 192
5.5.1 Factor Analysis for Organic Structure Measurement ..... 193
5.5.2 Factor Analysis for Clan Culture Measurement ..... 194
5.5.3 Factor Analysis for Adhocracy Culture Measurement ..... 195
5.5.4 Factor Analysis for Knowledge Sharing Culture Measurement ..... 196
5.5.5 Factor Analysis for Employee Level of Engagement ..... 197
5.5.6 Factor Analysis for Shop-floor Employee Ambidexterity Items ..... 198
5.5.7 Factor Analysis for Organisational Innovation Items ..... 199
5.5.8 Factor Analysis for Marketing Innovation Items ..... 200
5.5.9 Factor Analysis for Organisational Ambidexterity Items ..... 201
5.5.10 Factor Analysis for Manager's Ambidexterity Items ..... 202
5.5.11 Factor Analysis for Customer Engagement Items ..... 203
5.5.12 Factor Analysis for Organisational Performance Items ..... 205
5.6 Summary of Chapter ..... 205
Chapter 6 ..... 207
6 Quantitative Research Phase: Confirmatory Factor Analysis ..... 207
6.1 The Choice of Structural Equation Modelling for CFA and Structural Relationships ..... 207
6.2 SEM Indices for Model Fitness and Construct Validity ..... 208
6.2.1 Absolute Fit Indices ..... 208
6.2.2 Incremental Fit Indices ..... 209
6.2.3 Parsimony Fit Indices ..... 209
6.2.4 Summary of GOF Indices for SEMs ..... 210
6.3 The Analysis of Moment Structures Software and the CFA Model Types 211
6.4 CFA for Research Constructs in Shop-floor Employee Survey ..... 212
6.4.1 CFA for Organic Structure ..... 212

6.4.2 CFA for Clan Culture ..... 213
6.4.3 CFA for Adhocracy Culture ..... 214
6.4.4 CFA for Knowledge Sharing Culture ..... 215
6.4.5 CFA for Employee Level of Engagement ..... 216
6.4.6 CFA for Employee Passive Ambidexterity ..... 217
6.4.7 CFA for Employee Active Ambidexterity ..... 221
6.5 CFA for Research Constructs in Managerial Staff Survey ..... 225
6.5.1 CFA for Organisational Innovation ..... 225
6.5.2 CFA for Marketing Innovation ..... 226
6.5.3 Organisational Ambidexterity ..... 228
6.5.4 Manager Ambidexterity ..... 232
6.5.5 Customer Engagement ..... 236
6.5.6 Organisational Performance ..... 237
6.6 Reliability and Validity of Constructs ..... 238
6.6.1 Reliability and Validity of Constructs in Shop-floor Staff Survey ..... 240
6.6.2 Discussion of Results of Construct Validity for the Research Variables in the Shop-floor Staff Survey ..... 243
6.6.3 Reliability and Validity of Constructs in Managerial Staff Survey ..... 244
6.6.4 Discussion of Results of Construct Validity for the Research Variables in the Managerial Staff Survey ..... 248
6.7 Summary of Chapter ..... 249
Chapter 7 ..... 250
7 Structural Modelling and Research Constructs Relationships: Analysis and Discussions ..... 250
7.1 Introduction ..... 250
7.2 Testing Structural Relationships and Validating the Research Hypotheses 251
7.2.1 Research Hypothesis 1 ..... 251
7.2.2 Research Hypothesis 2 ..... 253
7.2.3 Research Hypothesis 3 ..... 254
7.2.4 Research Hypothesis 4 ..... 256
7.2.5 Research Hypothesis 5 ..... 258
7.2.6 Research Hypothesis 6 ..... 260
7.2.7 Research Hypothesis 7 ..... 261

7.2.8 Research Hypothesis 8 ..... 263
7.2.9 Research Hypothesis 9a ..... 264
7.2.10 Research Hypothesis 9b ..... 266
7.2.11 Research Hypothesis 10a ..... 268
7.2.12 Research Hypothesis 10b ..... 269
7.2.13 Research Hypothesis 11a ..... 271
7.2.14 Research Hypothesis 11b ..... 272
7.2.15 Research Hypothesis 12 ..... 273
7.2.16 Research Hypothesis 13 ..... 275
7.2.17 Research Hypothesis 14 ..... 276
7.2.18 Research Hypothesis 15 ..... 277
7.2.19 Research Hypothesis 16 ..... 279
7.3 Emerging Hypotheses from the Qualitative Phase of the Study ..... 281
7.3.1 Research Hypothesis 17 ..... 282
7.3.2 Research Hypothesis 18 ..... 283
7.3.3 Research Hypothesis 19 ..... 285
7.3.4 Research Hypothesis 20 ..... 286
7.4 Effect of Employee Attributes on Ambidexterity ..... 287
7.4.1 Effect of Age ..... 287
7.4.2 Effect of Past Working Experience ..... 288
7.4.3 Effect of Present Working Experience ..... 289
7.4.4 Effect of Employee Academic Qualification ..... 290
7.5 Summary of Chapter ..... 291
Chapter 8 ..... 294
8 Conclusions and Recommendations ..... 294
8.1 Introduction ..... 294
8.2 Revisiting the Research Agenda ..... 294
8.3 Addressing the Research Questions ..... 296
8.4 Research Contributions ..... 299
8.4.1 Theoretical Implications ..... 302
8.4.2 Policy and Industrial Implications ..... 303
8.5 Research Limitation and Recommendations for Future Research ..... 305
8.6 Concluding Remark ..... 306

References ..... 307
Appendices ..... 331
Appendix A: Introductory Pack for the Study ..... 332
Appendix B: A brief profile of the researcher published by The Tribune ..... 335
Appendix C: Overview of the Organisations selected for the Pilot Studies ..... 336
Appendix D: Qualitative Study Interview Guide ..... 344
Appendix E: Managerial Staff (Cover Letter and Questionnaire) ..... 348
Appendix F: Non-managerial Staff (Cover Letter and Questionnaire) ..... 353
Appendix G: Reliability Analyses of Items and Constructs in Managerial Survey . 360
Appendix H: Reliability Analyses of Items and Constructs in Shop floor Survey .. 364
Appendix I: Non-Response Bias Analysis for Managerial Staff Online Survey ..... 370
Appendix J: Non-Response Bias Analysis for Shop-floor Staff Online Survey..... 375
Appendix K: Non-Response Bias Analysis for Managerial Staff Paper Survey ..... 381
Appendix L: Non-Response Bias Analysis for Shop-floor Staff Paper Survey ..... 386
Appendix M1: Total Variance Explained and Scree Plot for Organic Structure Items ..... 392
Appendix M2: Total Variance Explained and Scree Plot for Clan Culture Items ... 393
Appendix M3: Total Variance Explained and Scree Plot for Adhocracy Culture Items ..... 394
Appendix M4: Total Variance Explained and Scree Plot for Knowledge Sharing Culture Items ..... 395
Appendix M5: Total Variance Explained and Scree Plot for Employee Level of Engagement Items ..... 396
Appendix M6: Total Variance Explained and Scree Plot for Shop-floor Employee Ambidexterity Items ..... 397
Appendix M7: Total Variance Explained and Scree Plot for Organisational Innovation Items ..... 399
Appendix M8: Total Variance Explained and Scree Plot for Marketing Innovation Items ..... 400
Appendix M9: Total Variance Explained and Scree Plot for Organisational Ambidexterity Items ..... 401
Appendix M10: Total Variance Explained and Scree Plot for Manager's Ambidexterity Items ..... 403
Appendix M11: Total Variance Explained and Scree Plot for Customer Engagement Items ..... 405

Appendix M12: Total Variance Explained and Scree Plot for Organisational Performance ..... 407

# List of Figures

Figure 1.1 Proposed Research Strategy ..... 8
Figure 2.1: Soft and Hard Components of Innovation ..... 33
Figure 2.2: Innovation Measurement Framework ..... 34
Figure 2.3: Innovation Value Chain ..... 35
Figure 2.4: Linking the Innovation Value Chain to the Soft and the Hard Components of Innovation System ..... 36
Figure 2.5 Linking Innovation Types to Total Design Concept ..... 38
Figure 2.6: Examples of Previous Research Studies on the Antecedents of Organisational Ambidexterity ..... 50
Figure 2.7: Pictorial View of x and y components of Organisational Ambidexterity and their relationship with OMIs ..... 54
Figure 2.8: Identified Gaps ..... 58
Figure 2.9: The relationships between the research questions and the reviewed literature ..... 59
Figure 2.10: The Research Framework ..... 60
Figure 2.11: The Three Levels of Culture ..... 69
Figure 2.12: Schein's View of Organisational Culture ..... 70
Figure 3.1 Steps in Research Process and their Interactions with the Established Body of Knowledge ..... 78
Figure 3.2: Strategies of Research Inquiry ..... 86
Figure 3.4: Flow Chart for the Steps in the Explorative Research Phase ..... 94
Figure 3.5: Continuum of Interview Style (Unstructured-Structured) ..... 98
Figure 3.6: Components of Data Analysis: Interactive Model ..... 99
Figure 3.7: Data Analysis in Qualitative Research ..... 100
Figure 3.8: Types of Research Variables ..... 110
Figure 3.9: Employees' Ambidexterity: Exploration and Exploitation Orientations ..... 120
Figure 4.1: Identified Antecedents to Organisational and Marketing Innovations Capabilities ..... 143
Figure 4.2: Other Emerging Themes ..... 144
Figure 4.3: Culture Profile for Company A ..... 147
Figure 4.4: Culture Profile for Company B ..... 148
Figure 4.5: Culture Profile for Company C ..... 149
Figure 4.6: Culture Profile for Company D ..... 150
Figure 4.7: Culture Profile for Company E ..... 150
Figure 4.8: Culture Profile for Company F ..... 151
Figure 4.9: Culture Profile for Company G ..... 152
Figure 4.10: Culture Profile for Company H ..... 152
Figure 4.11: Culture Profile for Company I ..... 153
Figure 4.12: Culture Profile for Company J ..... 154
Figure 4.13: Culture Profile for Company K ..... 154
Figure 4.14: Culture Profile for Company L ..... 155
Figure 4.15: Comparing Culture Types across the Case Organisations ..... 157

Figure 5.1: Location of Companies (Shop-floor Staff)....173
Figure 5.2: Years in Operation by Company (Shop-floor Staff Survey)....173
Figure 5.3: Company Size (Shop-floor Staff Survey) ....174
Figure 5.4: Location of Companies (Managerial Staff Survey) ....175
Figure 5.5: Years in Operation by Company (Managerial Staff Survey)....175
Figure 5.6: Company Size (Managerial Staff Survey)....176
Figure 5.7: Responses for Organic Structure Items....178
Figure 5.8: Responses for Clan Culture Items....179
Figure 5.9: Responses for Adhocracy Culture Items....180
Figure 5.10: Responses for Knowledge Sharing Culture....181
Figure 5.11: Responses for Employee Level of Engagement....182
Figure 5.12: Number of Changes proposed by the Employees ....183
Figure 5.13: Number of Changes Implemented....184
Figure 5.14: Employee Suggestion and Implementation....185
Figure 5.15: Employee Personal Development Strategy (EPD) and its Organisational Relevance (OR)....186
Figure 5.16: Responses for Items in Organisational Innovation Capability....187
Figure 5.17: Responses for Items in Marketing Innovation Capability....188
Figure 5.18: Responses for Items in Organisational Ambidexterity....189
Figure 5.19: Responses for Items in Managerial Ambidexterity....190
Figure 5.20: Responses for Items in Customer Engagement....191
Figure 5.21: Responses for Items in Organisational Performance ....192
Figure 6.1: CFA Model for Organic Structure showing Standardised Factor Loadings ....212
Figure 6.2: CFA Model for Clan Culture showing Standardised Factor Loadings ...213
Figure 6.3: CFA Model for Adhocracy Culture showing Standardised Factor Loadings ....214
Figure 6.4: CFA Model for Knowledge Sharing Culture showing Standardised Factor Loadings....215
Figure 6.5: CFA Model for Employee Level of Engagement showing Standardised Factor Loadings ....217
Figure 6.6: CFA Model for EPECf showing Standardised Factor Loadings....218
Figure 6.7: CFA Model for EPECp showing Standardised Factor Loadings....219
Figure 6.8: CFA Model for EPA showing Standardised Factor Loadings ....220
Figure 6.9: CFA Model for EAECf showing Standardised Factor Loadings....222
Figure 6.10: CFA Model for EAECp showing Standardised Factor Loadings ....223
Figure 6.11: CFA Model for EAA showing Standardised Factor Loadings....224
Figure 6.12: CFA Model for Organisational Innovation showing Standardised Factor Loadings....225
Figure 6.13: CFA Model for Marketing Innovation showing Standardised Factor Loadings....227
Figure 6.14: CFA Model for OECf showing Standardised Factor Loadings ....228
Figure 6.15: CFA Model for OECp showing Standardised Factor Loadings....229
Figure 6.16: CFA Model for Organisational Ambidexterity showing Standardised Factor Loadings ....231

Figure 6.17: CFA Model for MECf showing Standardised Factor Loadings.....232
Figure 6.18: CFA Model for MECp showing Standardised Factor Loadings .....234
Figure 6.19: CFA Model (Second-order Model) for Managerial Ambidexterity.....235
Figure 6.20: CFA Model for Customer Engagement .....236
Figure 6.21: CFA Model for Organisational Performance .....237
Figure 6.22: Shop-floor Staff Structural Model of Standardised Correlation Estimates between the constructs .....241
Figure 6.23: Managerial Staff Structural Model of Standardised Correlation Estimates between the constructs .....246
Figure 7.1: Structural Model Validating the Research Hypothesis 1 .....251
Figure 7.2: Structural Model Validating the Research Hypothesis 2 .....253
Figure 7.3: Structural Model Validating the Research Hypothesis 3 .....255
Figure 7.4: Structural Model Validating the Research Hypothesis 4 .....257
Figure 7.5: Structural Model Validating the Research Hypothesis 5 .....258
Figure 7.6: Structural Model Validating the Research Hypothesis 6 .....260
Figure 7.7: Structural Model Validating the Research Hypothesis 7 .....261
Figure 7.8: Structural Model Validating the Research Hypothesis 8 .....263
Figure 7.9: Structural Model Validating the Research Hypothesis 9a.....264
Figure 7.10: Structural Model Validating the Research Hypothesis 9b .....266
Figure 7.11: Structural Model Validating the Research Hypothesis 10a.....268
Figure 7.12: Structural Model Validating the Research Hypothesis 10b .....269
Figure 7.13: Structural Model Validating the Research Hypothesis 11a.....271
Figure 7.14: Structural Model Validating the Research Hypothesis 11b .....272
Figure 7.15: Structural Model Validating the Research Hypothesis 12 .....274
Figure 7.16: Structural Model Validating the Research Hypothesis 13 .....275
Figure 7.17: Structural Model Validating the Research Hypothesis 14 .....276
Figure 7.18: Structural Model Validating the Research Hypothesis 15 .....278
Figure 7.19: Structural Model Validating the Research Hypothesis 16 .....280
Figure 7.20: Structural Model Validating the Research Hypothesis 17 .....282
Figure 7.21: Structural Model Validating the Research Hypothesis 18 .....283
Figure 7.22: Structural Model Validating the Research Hypothesis 19 .....285
Figure 7.23: Structural Model Validating the Research Hypothesis 20 .....286
Figure 7.24: Explorative Assessment of Effect of Employee Age on Ambidexterity .....288
Figure 7.25: Explorative Assessment of Effect of Past Working Experience on Ambidexterity .....289
Figure 7.26: Explorative Assessment of Effect of Present Working Experience on Ambidexterity .....290
Figure 7.27: Explorative Assessment of Effect of Academic Qualification on Ambidexterity .....291
Figure 8.1: Research Methods .....295
Figure 8.2: Research Framework Showing Constructs Relationships.....300
Figure 8.3: CIA-OA-OMIs Linkage .....301
Figure 8.4: Relating Soft Innovations and Ambidexterity to Short and Long Term Organisational Focus .....304

# List of Tables

Table 2.1: European Commission Definitions of Micro and SMEs (May 2003) ..... 12
Table 2.2: The United Kingdom's Definitions of SMEs (2006) ..... 12
Table 2.3: Definition of Micro, Small and Medium-sized Enterprises in Nigeria ..... 13
Table 2.4: Classifying Nigerian SME Growth Constraints ..... 20
Table 2.5: Conway and Steward's Types of Innovation ..... 27
Table 2.6: Classes of Innovative Changes ..... 28
Table 2.7: Problems with Partial Models (Modified) ..... 37
Table 2.8: Summary of Exemplar Studies on Ambidexterity ..... 43
Table 2.9: Variables Describing the Organisational Structure ..... 61
Table 2.10: Mechanistic and Organic Organisations ..... 62
Table 2.11: Organisational Culture Types and Key Features ..... 73
Table 3.1: Common Philosophical Elements of Paradigms ..... 79
Table 3.2: Assumptions and ideas of the Positivist, Interpretive and Critical Theory World Views ..... 83
Table 3.3: Features of Quantitative, Qualitative and Mixed Methods ..... 89
Table 3.4: Preliminary and Revised Research Questions ..... 91
Table 3.5: Preliminary and Revised Research Hypotheses ..... 92
Table 3.6: Qualitative Data Collection Types ..... 96
Table 3.7: Commonly Used Probability Sampling Methods ..... 103
Table 3.8: Commonly Used Non-probability Sampling Methods ..... 104
Table 3.9: Survey Designs for Studying Changes Over Time ..... 107
Table 3.10: Researchers and Respondents' Roles for Survey Instrument ..... 109
Table 3.11: Organisational Innovation Survey Items ..... 111
Table 3.12: Marketing Innovation Survey Items ..... 112
Table 3.13: Customer Engagement Survey Items ..... 115
Table 3.14: Organisational Performance Survey Items ..... 116
Table 3.15: Clan and Adhocracy Cultures Items ..... 118
Table 3.16: Employee Engagement Survey Items ..... 119
Table 3.17: Pretesting the Managerial Staff Survey Instrument (Cronbach's alpha, α, for the Research Constructs) ..... 122
Table 3.18: Pretesting the Shop Floor Employees Survey Instrument (Cronbach's alpha, α, for the Research Constructs) ..... 122
Table 3.19: Group of Unethical Activities in Social Research ..... 123
Table 4.1: Establishment Date and Company Size ..... 127
Table 4.2: Sequence of events for the study interviews ..... 127
Table 4.3: Interviewees' Occupational Positions (IOP) ..... 128
Table 4.4: Organisational Innovation Capability ..... 133
Table 4.5: Marketing Innovation Capability ..... 138
Table 4.6: Other Perspectives Emerging from the Qualitative Study ..... 142
Table 4.7: The Culture Scores for all the Case Organisations ..... 156
Table 5.1: Summary of Responses for the Field Survey (Company Level) ..... 161
Table 5.2: Classification for Non-Response Bias Analysis ..... 163

Table 5.3: Three Main Classes of the Field Data....163
Table 5.4: Results of the Non-Response Bias Analysis....164
Table 5.5: Gender of the Shop-floor Employees....166
Table 5.6: Age of the Shop-floor Staff....167
Table 5.7: Descriptive Statistics for the Employees' Work Experience in their Current Organisation....167
Table 5.8: Previous Work Experience of the Employees....167
Table 5.9: Employees' Highest Academic Qualifications....168
Table 5.10: Employees' Professional Qualifications....168
Table 5.11: Survey Methods (Shop-floor Staff)....168
Table 5.12: Company Type (Shop-floor Employees)....169
Table 5.13: Company Geographical Location (Shop-floor Employees)....169
Table 5.14: Gender of the Managerial Staff....170
Table 5.15: Age of the Managerial Staff....170
Table 5.16: Descriptive Statistics for the Managerial Employees' Work Experience in their Current Organisation....170
Table 5.17: Previous Work Experience of the Managerial Staff....171
Table 5.18: Managers' Highest Academic Qualifications....171
Table 5.19: Managers' Professional Qualifications....171
Table 5.20: Survey Methods (Managerial Staff)....172
Table 5.21: Company Type (Managerial Staff)....172
Table 5.22: Company Geographical Location (Managerial Employees)....172
Table 5.23: Company Type (Shop-floor Staff Survey)....174
Table 5.24: Company Type (Managerial Staff Survey)....176
Table 5.25: Extracted Factors from Organic Structure Items....193
Table 5.26: KMO and Bartlett's Test for Organic Structure Items....194
Table 5.27: Extracted Factors from Clan Culture Items....194
Table 5.28: KMO and Bartlett's Test for Clan Culture Items....195
Table 5.29: Extracted Factors from Adhocracy Culture Items....195
Table 5.30: KMO and Bartlett's Test for Adhocracy Culture Items....196
Table 5.31: Extracted Factors from Knowledge Sharing Culture Items....196
Table 5.32: KMO and Bartlett's Test for Knowledge Sharing Items....196
Table 5.33: Extracted Factors from Employee Level of Engagement....197
Table 5.34: KMO and Bartlett's Test for Employee Level of Engagement....197
Table 5.35: Employee Level of Engagement loading to a Factor....198
Table 5.36: Extracted Factors from Shop-floor Employee Ambidexterity....198
Table 5.37: KMO and Bartlett's Test for Shop-floor Employee Ambidexterity....199
Table 5.38: Extracted Factors from Organisational Innovation Items....199
Table 5.39: KMO and Bartlett's Test for Organisational Innovation Items....199
Table 5.40: Extracted Factors from Marketing Innovation Items....200
Table 5.41: KMO and Bartlett's Test for Marketing Innovation Items....200
Table 5.42: Extracted Factor for Organisational Ambidexterity Items (One Component measuring Organisational Ambidexterity)....201

Table 5.43: Extracted Factors for Organisational Ambidexterity.....201
Table 5.44: KMO and Bartlett's Test for Organisational Ambidexterity.....202
Table 5.45: Extracted Factor for Manager's Ambidexterity Items (One Component measuring Manager's Ambidexterity).....202
Table 5.46: Extracted Factors for Manager's Ambidexterity.....203
Table 5.47: KMO and Bartlett's Test for Manager's Ambidexterity.....203
Table 5.48: Extracted Factors from Customer Engagement.....204
Table 5.49: KMO and Bartlett's Test for Customer Engagement.....204
Table 5.50: Extracted Factors from Organisational Performance Items.....205
Table 5.51: KMO and Bartlett's Test for Organisational Performance.....205
Table 6.1: GOF Indices where number of Observations is less than 250.....210
Table 6.2: GOF Indices where number of Observations exceeds 250.....210
Table 6.3: Other GOF Indices.....210
Table 6.4: GOF Fit Statistics for Organic Structure.....212
Table 6.5: Regression Weights for Organic Structure.....213
Table 6.6: GOF Fit Statistics for Clan Culture.....213
Table 6.7: Regression Weights for Clan Culture.....214
Table 6.8: GOF Fit Statistics for Adhocracy Culture.....214
Table 6.9: Regression Weights for Adhocracy Culture.....215
Table 6.10: GOF Fit Statistics for KSC.....215
Table 6.11: Regression Weights for KSC.....216
Table 6.12: GOF Fit Statistics for Employee Level of Engagement.....216
Table 6.13: Regression Weights for Employee Level of Engagement.....217
Table 6.14: GOF Fit Statistics for EPECf.....218
Table 6.15: Regression Weights for EPECf.....218
Table 6.16: GOF Fit Statistics for EPECp.....219
Table 6.17: Regression Weights for EPECp.....220
Table 6.18: GOF Fit Statistics for Employee Passive Ambidexterity.....220
Table 6.19: Regression Weights for EPA.....221
Table 6.20: GOF Fit Statistics for EPECf.....221
Table 6.21: Regression Weights for EAECf.....222
Table 6.22: GOF Fit Statistics for EAECp.....222
Table 6.23: Regression Weights for EAECp.....223
Table 6.24: GOF Fit Statistics for Employee Active Ambidexterity.....224
Table 6.25: Regression Weights for EAA.....224
Table 6.26: GOF Fit Statistics for Organisational Innovation.....225
Table 6.27: Regression Weights for Organisational Innovation.....226
Table 6.28: GOF Fit Statistics for Marketing Innovation.....226
Table 6.29: Regression Weights for Marketing Innovation.....227
Table 6.30: GOF Fit Statistics for Organisational Explorative Capability.....228
Table 6.31: Regression Weights for OECf.....228
Table 6.32: GOF Fit Statistics for Organisational Exploitative Capability.....229
Table 6.33: Regression Weights for OECp.....230

Table 6.34: GOF Fit Statistics for Organisational Ambidexterity ..... 230
Table 6.35: Regression Weights for OA ..... 231
Table 6.36: GOF Fit Statistics for Manager's Explorative Capability ..... 232
Table 6.37: Regression Weights for MECf ..... 233
Table 6.38: GOF Fit Statistics for Manager's Exploitative Capability ..... 233
Table 6.39: Regression Weights for MECp ..... 234
Table 6.40: GOF Fit Statistics for Managerial Ambidexterity ..... 235
Table 6.41: GOF Fit Statistics for Customer Engagement ..... 236
Table 6.42: Regression Weights for Customer Engagement ..... 237
Table 6.43: GOF Fit Statistics for Organisational Performance ..... 237
Table 6.44: Regression Weights for Organisational Performance ..... 238
Table 6.45: Requirements for Construct Validity ..... 239
Table 6.46: Parameters to Compute Composite Reliability and Average Variance Extracted for the Constructs in Shop-floor Staff Survey ..... 240
Table 6.47: GOF statistics for Shop-floor Staff Structural Model for Correlation Estimates between the Constructs ..... 242
Table 6.48: Correlations Estimates between Shop-floor Staff Survey Constructs from AMOS ..... 242
Table 6.49: Comparing the AVE with the Square of the Correlation Estimates for Shop-floor Staff Constructs ..... 243
Table 6.50: Parameters to Compute Composite Reliability and Average Variance Extracted for the Constructs in Managerial Staff Survey ..... 245
Table 6.51: GOF statistics for Managerial Staff Structural Model for Correlation Estimates between the Constructs ..... 247
Table 6.52: Correlations Estimates between Managerial Staff Survey Constructs from AMOS ..... 247
Table 6.53: Comparing the AVE with the square of the Correlation Estimates for Managerial Staff Constructs ..... 248
Table 7.1: Goodness-of-Fit Indices for Research Structural Models ..... 250
Table 7.2: Multiple Fit Indices for Structural Model validating H1 ..... 252
Table 7.3: Regression Weights for Structural Model validating H1 ..... 252
Table 7.4: Multiple Fit Indices for Structural Model validating H2 ..... 254
Table 7.5: Regression Weights for Structural Model validating H2 ..... 254
Table 7.6: Multiple Fit Indices for Structural Model validating H3 ..... 255
Table 7.7: Regression Weights for Structural Model validating H3 ..... 256
Table 7.8: Multiple Fit Indices for Structural Model validating H4 ..... 257
Table 7.9: Regression Weights for Structural Model validating H4 ..... 258
Table 7.10: Multiple Fit Indices for Structural Model validating H5 ..... 259
Table 7.11: Regression Weights for Structural Model validating H5 ..... 259
Table 7.12: Multiple Fit Indices for Structural Model validating H6 ..... 260
Table 7.13: Regression Weights for Structural Model validating H6 ..... 261
Table 7.14: Multiple Fit Indices for Structural Model validating H7 ..... 262
Table 7.15: Regression Weights for Structural Model validating H7 ..... 262

Table 7.16: Multiple Fit Indices for Structural Model validating H8 ..... 263
Table 7.17: Regression Weights for Structural Model validating H8 ..... 264
Table 7.18: Multiple Fit Indices for Structural Model validating H9a ..... 265
Table 7.19: Regression Weights for Structural Model validating H9a ..... 265
Table 7.20: Multiple Fit Indices for Structural Model validating H9b ..... 266
Table 7.21: Regression Weights for Structural Model validating H9b ..... 267
Table 7.22: Multiple Fit Indices for Structural Model validating H10a ..... 268
Table 7.23: Regression Weights for Structural Model validating H10a ..... 269
Table 7.24: Multiple Fit Indices for Structural Model validating H10b ..... 270
Table 7.25: Regression Weights for Structural Model validating H10b ..... 270
Table 7.26: Multiple Fit Indices for Structural Model validating H11a ..... 271
Table 7.27: Regression Weights for Structural Model validating H11a ..... 272
Table 7.28: Multiple Fit Indices for Structural Model validating H11b ..... 273
Table 7.29: Regression Weights for Structural Model validating H11b ..... 273
Table 7.30: Multiple Fit Indices for Structural Model validating H12 ..... 274
Table 7.31: Regression Weights for Structural Model validating H12 ..... 274
Table 7.32: Multiple Fit Indices for Structural Model validating H13 ..... 275
Table 7.33: Regression Weights for Structural Model validating H13 ..... 276
Table 7.34: Multiple Fit Indices for Structural Model validating H14 ..... 277
Table 7.35: Regression Weights for Structural Model validating H14 ..... 277
Table 7.36: Multiple Fit Indices for Structural Model validating H15 ..... 278
Table 7.37: Regression Weights for Structural Model validating H15 ..... 279
Table 7.38: Multiple Fit Indices for Structural Model validating H16 ..... 280
Table 7.39: Regression Weights for Structural Model validating H16 ..... 281
Table 7.40: Multiple Fit Indices for Structural Model validating H17 ..... 282
Table 7.41: Regression Weights for Structural Model validating H17 ..... 283
Table 7.42: Multiple Fit Indices for Structural Model validating H18 ..... 284
Table 7.43: Regression Weights for Structural Model validating H18 ..... 284
Table 7.44: Multiple Fit Indices for Structural Model validating H19 ..... 285
Table 7.45: Regression Weights for Structural Model validating H19 ..... 285
Table 7.46: Multiple Fit Indices for Structural Model validating H20 ..... 286
Table 7.47: Regression Weights for Structural Model validating H20 ..... 287
Table 7.48: Mann-Whitney Test Statistics for Age Effect on Ambidexterity ..... 288
Table 7.49: Mann-Whitney Test Statistics for Effect of Past Working Experience on Ambidexterity ..... 289
Table 7.50: Mann-Whitney Test Statistics for Effect of Present Working Experience on Ambidexterity ..... 290
Table 7.51: Mann-Whitney Test Statistics for Effect of Academic Qualifications on Ambidexterity ..... 291
Table 7.52: Standardised Parameter Estimates and p-values for the Research Hypotheses, H1 to H20. ..... 292

# Chapter 1

# 1 Introduction

## 1.1 Research Background

Governments in various countries of the world are known to offer support services for the small and medium-sized enterprises (SMEs) in order to enhance their performance (DTI, 2005; DTI, 2006; Cravo et al., 2010; Subair, 2011; Omankhanlen, 2011a; Omankhanlen, 2011b; Ajayi and Adesina, 2011). However, in this era of global economic recession, coupled with very slow economic recovery in many parts of the world, SMEs are not likely to be spared in the austerity measures that are being put in place to ensure the much needed economic recovery. SMEs are internally characterised by their limited resources (Salavou et al., 2004), which often limits their ability to develop innovative approaches to business activities and embark on innovative projects that are crucial to their continuous survival (Goedhuys and Veugelers, 2012). Large firms, on the other hand, embark on innovative projects both internally and externally in collaboration with various research institutions from time to time; this has, in no small measure, contributed to their growth and survival of large firms even in difficult times (Kanter, 2010).

The characteristics of innovation processes and technological progress in developing countries are different from those in developed countries (Calvert et al., 1996; Salavou et al., 2004). In fact, the technological gap between developed and developing countries has seen technological advancement in the latter take place through the absorption and adaptation of existing technologies from the former, instead of breaking new technological ground (OECD/Eurostat, 2005; Goedhuys and Veugelers, 2012). Pre-existing innovative products and processes are frequently imported by developing nations from developed nations (OECD/Eurostat, 2005; Acharya and Keller, 2009; Blalock and Gertler, 2008). However, these technological (product and process) innovations have been shown not to yield the desired results in the business and economic environment of many developing nations (Khosla, 2005).
The question here is "Are the wrong technologies imported?" The answer is likely to be that the framework needed to obtain the full benefits from the technologies and/or to put them into optimal usage could be missing. According to Goedhuys and

Veugelers (2012), there is a dearth of information on how firms in developing nations could successfully adapt new technologies from the developed nations.

Despite the evidence that academic research on innovation processes has been on-going for a number of decades (Andriopoulos and Dawson, 2009), investigations addressing the innovation process in developing nations are very rare (Goedhuys and Veugelers, 2012). Calvert et al. (1996) and Salavou et al. (2004) posit the theory that using the findings from academic research on innovation studies in advanced countries to model or explain the innovation process in developing countries may be misleading. In developing nations, innovation strategies focus mainly on technology acquisition in the form of know-how embodied in innovative processes and products, such as machinery and equipment (OECD/Eurostat, 2005; Goedhuys and Veugelers, 2012). However, the literature lacks profound insight on what drives or hinders firms in developing countries to adopt and adapt new technologies (Goedhuys and Veugelers, 2012). Studies on drivers promoting acquisition of technological capabilities from foreign firms by small and medium local enterprises are also scarce in the literature (Park and Ghauri, 2011). Maine and Garnsey (2006) emphasise the need to investigate factors that influence the financial success and successful commercialisation of product innovation. While most extant research focuses on product and process innovations (Conway and Steward, 2009); the soft components of innovation process capable of facilitating the adoption and adaptation of technological innovations in the developing countries receive very limited attention.

### 1.2 Effective Innovation and Growth of SMEs in Developing Economies

Despite their closeness to their consumers, many small firms per se experience difficulty in achieving effective innovation; they are unable to commercialise their inventions successfully (O'Regan et al., 2006a; Van de Vrande et al., 2009; Gans and Stern, 2003). Effective innovations have a direct impact on business returns (O'Regan, 2006a). Many SMEs in developing countries, in particular, find it difficult to achieve effective innovations (O'Regan, 2006a).

According to O'Regan (2006a), many SMEs face some difficulties in converting R&D activities into effective innovation that leads to positive returns and firm growth. Limited research has been carried out on the productivity of innovation within the

context of SMEs (Cosh et al., 2005). A recent study by Park and Ghauri (2011) reveals that SMEs in developing economies search for complementary knowledge and learning opportunities, although this fails to guarantee possession of sufficient capacity to absorb these priceless technological innovations when compared with small firms in developed economies.

One of the factors limiting the growth of SMEs in developing nations is that little information exists about their operating procedures, management styles, success factors, and the theories explaining how the success has been achieved (Lee et al., 2010; Jackson et al., 2008). Beyond SMEs in the developing nations, Lam (2011) called for the investigation of the roles of endogenous organisational forces, for instance capacity for learning, values, interests and culture, in organisational change and innovation. De Mel et al. (2009) argue that, despite constituting the majority of the companies in the developing countries, micro and small firms have been neglected in the study of innovation.

### 1.3 Research Orientation on Innovation Types

Of the four types of innovation identified in the Oslo Manual guidelines for collecting and interpreting innovation data, only two, product and process innovations, have significant attention in the literature (OECD/Eurostat, 2005; Edquist, 2009; Naido, 2010; Salavou et al., 2004). While Naido (2010) specifically states that marketing innovation needs to be fully researched, Salavou et al. (2004) reveal that the relationship between market orientation and innovation process has received little attention from researchers. Augusto and Coelho (2009) further confirmed that marketing innovations need thorough scrutiny and research. The relevance of marketing and organisational innovations to SMEs' performance has been long neglected. Indeed, "…the non-technological forms of innovation deserve more attention… there are strong reasons to use a comprehensive innovation concept and give more attention to non-technological and intangible kinds of innovation…" (Edquist, 2009 p. 25). Previous research work on innovation has focused on technological innovation, utilising a narrow working definition of process and product innovations (Conway and Steward, 2009). These non-technological innovations can be likened to computer software; it is not possible to either see or touch computer software, but its impact can be far-reaching. Thus, innovation's 'hardware

components' (process and product innovations) are not capable of generating the desired business outcomes without innovation's 'software components', the organisational and marketing innovations of the business innovation system. According to Battisti and Stoneman (2010), empirical research on non-technological innovations has been limited thus far because such innovative changes do not involve changes in processes and products and research data is not readily available.

### 1.4 Research Orientation on Organisational Ambidexterity

In the last five years, Organisational Ambidexterity (OA) has emerged as crucial to the long-term organisational success (Raisch et al., 2009). OA has two components; *exploration* and *exploitation*, which according to Floyd and Lane (2010), are two inseparable facets of organisational learning. Previous studies have shown that every organisation must maintain a balance between having sufficient *exploitation* activities to ensure current viability, and having adequate *exploration* activities to ensure future viability (c.f. O'Reilly and Tushman, 2011; Lubatkin et al., 2006; Gibson and Birkinshaw, 2004). Findings from the literature also show that conceptual and empirically validated studies on ambidexterity at the individual level of analysis are very scarce; most of the past and current studies on OA focus at the business unit and firm levels of analysis (Mom et al. 2009; Raisch and Birkinshaw, 2008). The few studies on organisational ambidexterity at the individual level focus on the company leadership (c.f. Jansen et al., 2008; O'Reilly and Tushman; 2011; Mom et al., 2007; Lubatkin et al., 2006). Identifying the organisational context for individual ambidexterity can help to promote the overall OA and long-term organisational performance.

### 1.5 The Purpose Statement

The purpose statement addresses two crucial issues in every research study. It defines "…why you want to do the study and what you intend to accomplish…" Locke et al. (2007 p.9); this clearly shows the aims and the objectives of the study being undertaken. Research aims and objectives further clarify the purpose of the research study. In simple terms, the purpose statement establishes "the intent of the entire research study" (Creswell, 2009 p.111).

### 1.5.1 Research Aims

Previous research studies on innovation have tended to focus on process and product innovations. Recent theoretical opinions reveal that Organisational and Marketing Innovations (OMIs) capabilities could be the necessary prerequisites to optimally utilise and deploy such process and product innovations (Edquist, 2009; Lam, 2005). Organisational context that promotes an individual employee's contribution to OMIs capabilities could also be relevant in determining the appropriate business environment that favours Employee and Organisational Ambidexterity.

The aim of this research study, therefore, is to develop a framework that promotes "effective innovation" through the contribution of individual employees to OA and OMIs capabilities, particularly in Small and Medium-sized Manufacturing and Service Organisations (SMMSOs) in Nigeria. Innovation is said to be effective if it has direct and positive impact on business returns (O'Regan, 2006a). Employee Ambidexterity and OMIs capabilities could play a crucial role in achieving effective innovative changes and, thus, could be needed for firms to develop and optimally utilise technological innovations (Lam, 2005).

The ability of firms to recognise, acquire, assimilate, transform, and exploit knowledge from external sources is a function of its absorptive capacity (Scott-Kemmis et al., 2008; Lane et al., 2006). Organisational structure and culture are some of the identified constructs that affect the firm's absorptive capacity (Schmidt, 2005; Serradell-López and Grau-Alguero, 2010; Harrington and Guimaraes, 2005). These two constructs are also important to the firm's innovation capability (O'Regan et al., 2006b; Menguc and Auh, 2010). This suggests that implementation of an appropriate organisational culture and structure can help to build; sustain; and utilise OMIs capabilities. This study further aims to identify the components of organisational structure and culture that can improve the OMIs capabilities; OA; and Contextual Individual Ambidexterity of employees in SMMSOs. This research also intends to explore the relationships between these constructs and organisational performance towards promoting viable SMMSOs.

### 1.5.2 Research Questions

The objective of this research is to identify ways through which the innovative activities and long-term performance of the SMMSOs in Nigeria can be improved.

More detailed objectives of this research work can be articulated by the following research questions (RQs):

RQ1. What are the factors promoting Organisational and Marketing Innovations (OMIs) capabilities of SMMSOs in the developing economies?

RQ2. How does an organisational context (organisational structure and culture) affect the Contextual Individual Ambidexterity (CIA) of the shop floor employees and OMIs capabilities?

RQ3. What is the relationship between the CIA of the managerial employees and Organisational Ambidexterity?

RQ4. How does CIA level of the managerial employees affect the Organisational Innovation capability, the Marketing Innovation capability, and the Organisational Performance of SMMSOs in the developing economies?

Finally, the findings will be used to inform what contributions and recommendations can be made to concerned academics, entrepreneurs, governments, and support agencies on how to promote viable SMMSOs needed to offset the current public sector job losses.

### 1.6 Selection of the Study Area: Manufacturing and Service SMEs in Nigeria

The performance of SMEs in many developing nations often falls below expectation despite being known in many developed nations for their immense contribution to the sustainable economic growth (Arinaitwe, 2006). Findings from Ihua (2009) have shown that SMEs in Nigeria are underperforming when compared with their UK counterparts, although there is evidence of more support for UK SMEs when compared with those of Nigeria. In several instances, the Nigerian government has made several commitments to develop the SME sector and enhance its performance. For example, some government parastatals have been established that are meant to see to the promotion and development of the SME sector in the Nigerian economy; the Small and Medium Enterprises Equity Investment Scheme (SMEEIS); the Small and Medium Enterprises Development Agency of Nigeria (SMEDAN); the National Economic Empowerment and Development Strategy (NEEDS); and the National Poverty Eradication Programme (NAPEP).

Designed around the private sector, NEEDS is a development strategy towards poverty reduction; and the engine of growth for generating wealth and employment (NEEDS, 2004). While NEEDS and NAPEP are Nigeria's home-grown poverty reduction strategies designed to address several aspects of the economies, not just solely for Nigerian SMEs, SMEDAN is designed to focus solely on Nigerian SMEs. For example, NEEDS strategies are intended to reform the way government and its institutions work; to grow the private sector; to implement a social charter for the people; and to re-orientate the people with an enduring African value system (NEEDS, 2004). On the other hand, SMEDAN was specifically established to promote the development of the Micro, Small and Medium Enterprise (MSME) sector of the Nigeria Economy. SMEDAN is tasked with the same responsibilities as the Small Business Agency (SBA) in the States, and the Small Business Service (SBS) in the UK (Ihua, 2009). According to the SMEDAN-Mandate (2011), objectives include:

- To stimulate, monitor and coordinate the development of the MSMEs sector,
- To initiate and articulate policy ideas for micro, small and medium enterprises growth and development,
- To promote and facilitate development programmes, instruments, and support services in order to accelerate the development and modernisation of MSME operation,
- To serve as vanguard for rural industrialisation, poverty reduction, job creation and enhance sustainable livelihoods,
- To serve as a link between SMEs and internal and external sources of finance, appropriate technologies, technical skills, and large enterprises,
- To promote and provide a reliable access to information and industrial infrastructure and serve as an intermediary between MSMEs and the Government,
- To work in connection with other institutions in both public and private sectors in creating a good enabling environment for businesses in favour of MSME activities.

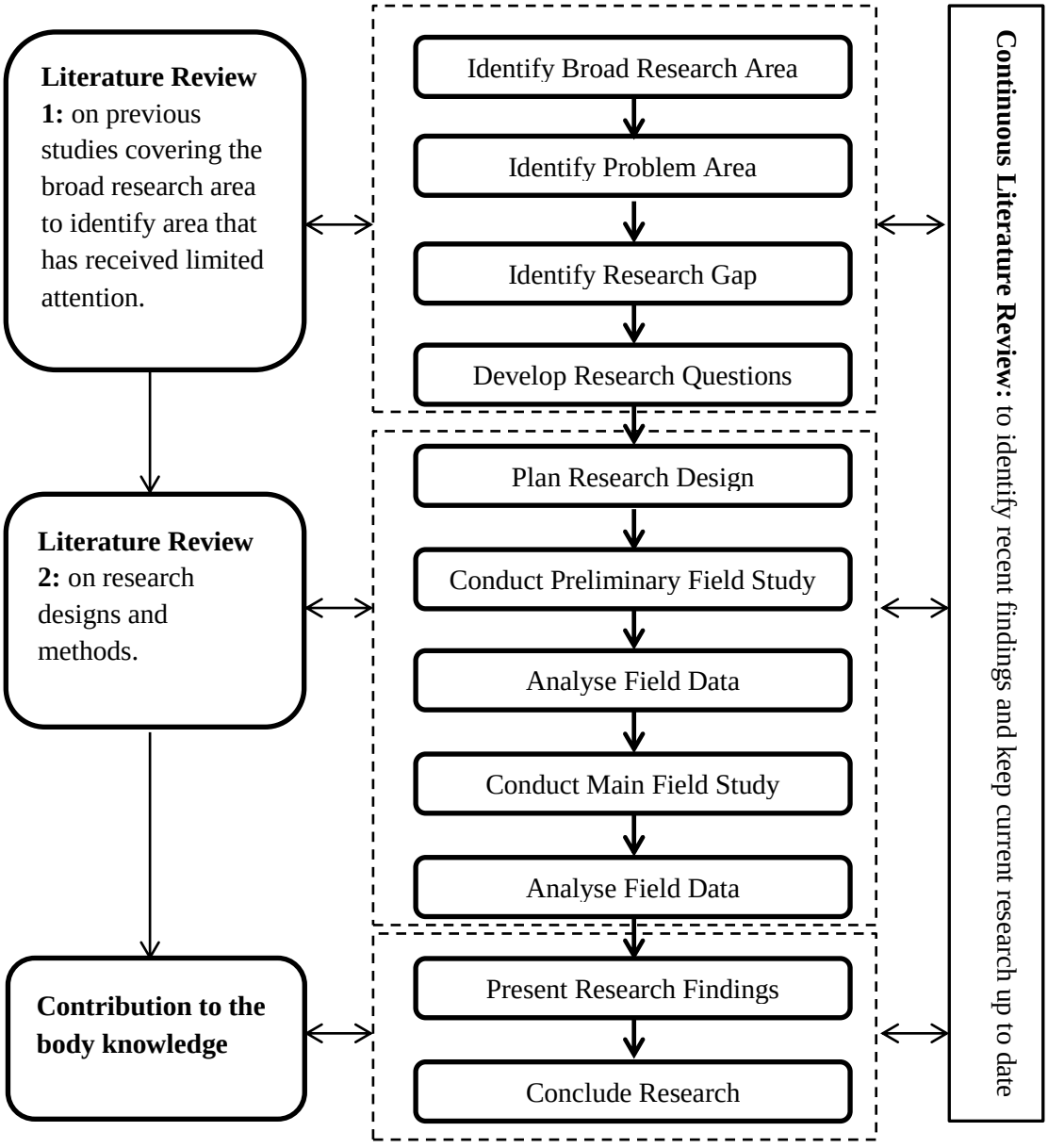
In Nigeria, SMEs account for about 95 per cent of formal manufacturing activity and 70 per cent of industrial jobs (Kauffmann, 2005). Most of the research studies on Nigerian SMEs tend to focus more on the external factors that are affecting them. For instance, findings from Ihua (2009) suggest that external factors, such as the poor economic conditions, dilapidated state of infrastructural and social supports, are

responsible for their failure. Furthermore, in Mambula (2002), government policies and attitudes of the public office holders; poor infrastructure; inconsistent access to raw materials; unreliable links to machines and their spare parts; and insufficient financial support are found to be limiting the Nigerian SME growth. While not disputing this fact, further work also has to be done on the internal factors and the in-house management of the Nigerian SMEs.

### 1.7 Proposed Research Strategy

The steps for the research project are summarised in Figure 1.1. The Figure represents a simplified workflow chart that shows how each of the steps links to another.

**Figure 1.1 Proposed Research Strategy**



The project commenced with a broad research area. This was followed by an in-depth literature review of the topics within the broad research area so as to identify the gap in the literature. The research objectives and questions were formulated based on the gap identified, with the research designed to address the research objectives; to answer the research questions; and to solve the overall research problem.

### 1.8 Structure of the Thesis

The thesis is comprised of eight chapters, including this introduction. Chapter 2 presents the review of the literature on innovation types, organisational ambidexterity, organisational structure and culture, and effective innovations in small and medium-sized organisations. The chapter also places into context the research questions; the theoretical framework and the research hypotheses. Chapter 3 focuses on the research methods. Based on the philosophical assumptions and the nature of the research questions, a two-phase sequential mixed methods design was considered suitable to address the research questions and to achieve the research aims and objectives.

Chapter 4 presents findings from the qualitative phase of the study, while Chapter 5 focuses on the quantitative phase of the research and provides an overview of the descriptive statistics and exploratory factor analysis. Chapter 6 addresses the rationale behind the choice of structural equation modelling for Confirmatory Factor Analysis and presents the measurement models and the corresponding good-of-fitness indices. Chapter 7 focuses on the structural models and research construct relationships. The results of the relationships between the research constructs are also presented, with supporting evidence that validates the research hypotheses. Chapter 8 draws conclusions from the research findings and makes recommendations for future research. Theoretical and industrial implications of the findings are presented and the contributions of this research to academia and industry are also highlighted.

### 1.9 Summary of Chapter

This chapter has outlined the research background and the purpose of the research. It has introduced the aims and objectives of the study within the context of small and medium-sized manufacturing and service organisations in Nigeria. The chapter has provided an overview of each chapter in the thesis, together with a simplified workflow chart summarising the steps undertaken throughout the research.

# Chapter 2

## 2 Literature Review

A literature review is an early and essential step in conducting a research study, and what follows are some of its goals (Neuman, 2011). It enables the researcher:

- To demonstrate an awareness of the related body of knowledge and to increase his or her professional competence, ability and research background.
- To show the path of prior research studies and their relationships to the current study. A good literature review connects the current study to the related body of knowledge.
- To integrate and summarise what is known in the research areas up to a point in time, and the review gives the direction of the study.
- To learn from others and generate new ideas.

Neuman (2011) identifies six different types of literature reviews; these are:

1. Context Review: The researcher links a specific study to a larger body of knowledge. The researcher introduces the research by placing it within a comprehensive framework and indicates how the work continues on a developing line of thought.
2. Historical Review: As a specialised review, the researcher traces an issue over a period of time. It can be combined with a theoretical or methodological review in order to reveal how a concept or theory develops.
3. Integrative Review: The researcher identifies and gives the summary of the current state of knowledge on the research area. The review may be published as a research agenda or as an independent article for the benefit of other researchers. This type of review may also be combined with a Context Review.
4. Methodological Review: As a specialised type of integrative review, the author compares and evaluates the relative strength of the methodologies used for various studies. The review also assesses how different methodologies influence research outcomes.
5. Self-study Review: A researcher demonstrates his or her familiarity with a subject area as a part of a course requirement.

6. Theoretical Review: The researcher compares several theories on a particular topic of interest based on their assumptions, logical consistency and scope of explanation.

This research study adopted a combination of Context and Integrative reviews.

## 2.1 Small and Medium-sized Enterprises (SMEs)

The global financial crisis of 2008-2009 has led to an increased interest in the role of SMEs in job creation and economic growth (Ardic et al., 2011). According to Ihua (2009), "…SMEs have been given due recognition especially in the developed nations for playing very important roles towards fostering accelerated economic growth, development and stability within several economies". SMEs are vital to sustainable, diversified, long-term economic growth (Ardic et al., 2011). According to Dietrich (2010) and Beck et al. (2008), SMEs in the Organisation for Economic Co-operation and Development (OECD) countries employ two-thirds of the formal work force. Based on the country-level data analysis by Ayyagari et al. (2007), SMEs in countries across the globe provide 60 per cent of employment in the manufacturing sector. This implies that development effort on SMEs often results in country growth and development.

It is often believed that SMEs are more innovative than the large firms (Ardic et al., 2011). When compared with large firms, SMEs in the developed countries often enhance their competitiveness through high quality product, flexibility, and responsiveness to customer needs (Ardic et al., 2011); this might be as a result of their closeness to the final consumers. It is also important to note that there has been more detailed attention given to those in developed nations than in developing nations. For example, Ardic et al. (2011) reveal that on average, "SME loans constitute 13 per cent of gross domestic product in developed countries and 3 per cent in developing countries".

### 2.1.1 Defining SMEs

Across the globe, the term SME has various definitions; there is no single, universally applied definition (UoSG, 2011; Nweze, 2009; Egbetokun et al., 2008; Aremu and Adeyemi, 2011) thus making it difficult to define. To simplify the comparison,

definitions from some of the internationally recognised sources are given in Table 2.1 and Table 2.2.

**Table 2.1: European Commission Definitions of Micro and SMEs (May 2003)**

| Enterprise | Staff Headcount | Annual turnover | Annual balance sheet total |
|---|---|---|---|
| **Micro** | <10 | ≤ €2 million | ≤ €2 million |
| **Small** | <50 | ≤ €10 million | ≤ €10 million |
| **Medium-sized** | <250 | ≤ €50 million | ≤ €43 million |

(Adapted from EU Commission, 2003)

**Table 2.2: The United Kingdom's Definitions of SMEs (2006)**

| Enterprise | Staff Headcount | Annual turnover | Annual balance sheet total |
|---|---|---|---|
| **Small** | ≤50 | ≤ £6.5 million | ≤ £3.26 million |
| **Medium-sized** | ≤250 | ≤£25.9 million | ≤ £12.9 million |

(Adapted from UoSG, 2011)

Table 2.1 shows the definitions of micro, small and medium-sized enterprises according to the recommendations by the European commission (Verheugen, 2003). Table 2.2 shows the United Kingdom's definition of SME in sections 382 and 465 of the Companies Act 2006 (Amendment) Regulations 2008, for the financial year ending on or after 6th April 2008. These definitions are based on the staff headcount; the annual turnover; and the annual balance sheet total. The staff headcount covers the full-time, the part-time and the seasonal staff expressed in annual work units (AWU). The annual turnover involves the income received excluding value added tax or other indirect taxes, and the annual balance sheet total is the value of the company's main assets. According to Verheugen (2003) and EU Commission (2003), new definitions often emerge as a result of the significant roles of SMEs in the economy; the need for an improvement in the business environment for SMEs; and also to address the following:

- To accommodate recent economic developments.
- To promote innovation and improve access to Research and Development.
- To improve access to financial assistance by setting new financial thresholds for them.
- To establish new relationships between enterprises so as to identify those enterprises in need of the provided support measures.

To define SMEs, three criteria are involved: the staff headcount; the balance sheet; and the annual turnover. It is important to note that, while it is compulsory to abide by the staff headcount limit, an enterprise may choose to abide by either the balance sheet or the turnover limit because these financial figures vary across sectors (Verheugen, 2003).

In Nigeria, various definitions for SME emerge from different sources based on, for example, size; level of operations; type of industry; assets employed; number of employees; and turnover. According to Udechukwu (2003), members of the National Council on Industry in Nigeria defined micro, small and medium-sized enterprises at the 13th Council meeting held in July, 2001, as shown in Table 2.3. Thus, the SME definition emanating from the meeting of the National Council on Industry in Nigeria can be considered to be a reliable one.

**Table 2.3: Definition of Micro, Small and Medium-sized Enterprises in Nigeria**

| Enterprise | Staff Headcount | Total Cost excluding cost of land |
|---|---|---|
| **Micro** | ≤10 | ≤ ₦1.5 million ≈ €0.0155 million |
| **Small** | ≤100 | ≤ ₦50 million ≈ €0.5155 million |
| **Medium-sized** | ≤ 300 | ≤ ₦200 million ≈ €2.0619 million |

Average exchange rate as at July-Dec 2001 (€1 = ₦97) (Source: CBN, 2006)

Comparing Table 2.1 and Table 2.3 is not an easy task, due to the different currencies: at May 6, 2003, €1 was equivalent to ₦144.19 (CBN, 2006). This reveals how difficult it is to have the same definition for SME across the globe with respect to the cost of doing business. Going by the total cost or the balance sheet's definition of micro, small and medium-sized enterprise across the globe, an enterprise classified as a medium-sized enterprise in Nigeria may likely be in the category of micro enterprise in Europe. Therefore, staff headcount is likely to be a parameter with a wider acceptance in defining SME across the globe. For the purpose of this research, the target will be enterprises with staff headcount between 10 and 300, inclusive, as it is meant to address SME problems in Nigeria. A staff headcount of 250 is not chosen for the upper limit, simply because of the growing rate of replacing human labour with machines in the developed nations.

### 2.1.2 SMEs and Innovation Process

The choice of SMEs in this research is because there is a dearth of studies that focus on the importance of SMEs for economic growth in the developing nations (Cravo et

al., 2010). Besides, SMEs have suffered higher failure rates when compared with large firms because of their reactive nature to problems, limited resources, informal strategies and structures (Terziovski, 2010; Qian and Li, 2003). Most of the research studies on innovation management have been carried out on large industries (Terziovski, 2010).

Despite their immense contributions to the economic success of many nations; their significant roles in job creation; in encouraging entrepreneurship and innovation (EU Commission, 2003, Javalgi and Todd, 2011), there have been very few studies on an innovation model specialised for SMEs (Lee et al., 2010). This reveals one of the reasons why many SMEs are finding it difficult to achieve successful innovation despite the huge investment in SME-related research and development activities (O'Regan et al., 2006b).

As described by Levy and Powell (2005), SMEs constitute a vibrant and growing sector in most economies across the globe, and changes in the global economic conditions contribute to the rise in number of SMEs. Their survey reveals that about 95% of firms are SMEs, employing an average of 65% of workers within the organisation for Economic Co-operation and Development (OECD), many of which are involved in new innovations (Levy and Powell, 2005). SMEs also play a significant role in employment generation, revenue generation, and export earnings in developing and emerging economies (Javalgi and Todd, 2011). However, SMEs are often faced with market imperfections and their limited resources impair their access to new innovation (Verheugen, 2003).

The SME sector has been the target of international and national aid agencies in many countries of the world (DTI, 2005; DTI, 2006; Omankhanlen, 2011a; Omankhanlen, 2011b). For instance in 2007, SME support service provided US$1.1 billion financial support for the Brazilian SMEs (Cravo et al., 2010). They called for the implementation of institutional improvement mechanism and educational policies that will give rise to a more productive SME sector in their investigation of how SMEs relate to the regional economic growth in Brazil.

Zeng et al. (2010) empirically investigated the relationships between different forms of collaborations employed by 137 manufacturing SMEs in China and their

innovation performance. While cooperation with other firms, the intermediary institutions, and the research institutions shows significant positive impacts on innovation performance, the linkage and cooperation with government agencies show no significant impact in their findings. They recommended formation of policies that would favour increase in level of active participation in R&D activities by SME partners and promote cooperation between SMEs and innovative partners so as to encourage mutual learning and technology transfer. SMEs are constrained by their poor access to vital infrastructural resources and there is a need for SMEs to enhance their competitiveness for them to grow and consequently survive the pressure of global competition (Sudhir-Kumar and Bala-Subrahmanya, 2010).

## 2.2 Obstacles to SME Growth and Entrepreneurship Development in Nigeria

### 2.2.1 Some Recent Studies

Most Nigerian SMEs fail to exist after their first five years of maturity; less than ten percent of the new small firms survive, thrive and grow (Aremu and Adeyemi, 2011). According to Basil (2005) and Aremu and Adeyemi (2011), some of the factors preventing the long term survival of Nigerian SMEs include: insufficient funds; unfair competition; inadequate market research; lack of book keeping techniques; no business goals and objectives; poor human resource management; inexperience of the small firm owners; no proper records to monitor activities; lack of business strategy and succession plan; inability to procure the appropriate plant and machinery; and inability to distinguish business activities from family affairs.

A vibrant SME sector is a prerequisite to job creation, wealth creation, equitable distribution of wealth, and poverty reduction in Nigeria (Aremu and Adeyemi, 2011). Aremu and Adeyemi (2011) argued that government interventions to transform the SME sector often failed to yield the desired results due to inconsistent policy, poor coordination and monitoring.

Egbetokun et al. (2008) investigated the innovation activities among some Nigerian SMEs and consider incremental innovations to be very important for SMEs in Nigeria because of the following reasons:

- They predict product quality.

- They help the firms to contribute more to the development of the local economy.
- The need to improve products and/or processes so as to meet the new demands by the customers.

They found that SMEs would focus more on incremental product and process innovations. Some Nigerian firms, however, desire to achieve radical innovations in their products in order to enter global markets (Egbetokun et al., 2008). This calls for the implementation of innovations strategies that go beyond the use of the product and process innovations imported from abroad. It requires a framework capable of inducing and driving a complete change to a firm's products and processes. This framework requires a complete system that encompasses process, product, organisational and marketing innovations.

Findings from Egbetokun et al. (2009) revealed a low capability for technological innovations in a medium-sized enterprise in Nigeria. Within the Nigerian context, improvement in the physical infrastructure, quality human resources, and robust financial systems are essential foundations for technological development. Technological capabilities are required to generate innovations (Egbetokun et al., 2009), but making innovation activity a profitable venture requires more of the soft components of the innovation system. Egbetokun et al. (2009) are of the opinion that well-organised industries and investments in learning and capability build-up are some of the prerequisites needed to improve the innovation activities among the SMEs in developing countries. They further opine that the innovative performance of SMEs can be enhanced in Nigeria through the following measures: the provision of highly-subsidised functional infrastructures; firms taking necessary steps to improve their absorptive capabilities; the use of government procurement to offer support for the enterprises; the use of innovation incentives in the form of reduction in tax and tariffs; and the formation of business and industry associations that foster competiveness and innovation, and regular supervision of member firms.

Apulu and Latham (2010) highlighted the need to promote the use of Information Communication Technology (ICT) in Nigerian SMEs in order to improve their managerial practices and their innovative performance. Nowadays, the business environment has been influenced by ICT and its business applications are diverse

(Apulu and Latham, 2010). The ability of Nigerian SMEs to survive the current trend of change in today's business environment depends on their access to, and their capability to deploy, these emerging technologies. Apulu and Latham (2010) recommended that the Nigerian government must not only make funds available to SMEs, but must also put support structures in place for SMEs. Adekunle and Tella (2008) are also of the opinion that Nigerian SMEs' participation in the internet economy be encouraged. They emphasised the need for the provision of basic functional infrastructure by the government in order to reduce the high price of internet access for the Nigerian SMEs. Among other things, internet economy reduces cost of transaction and ensures proximity to the markets (Adekunle and Tella, 2008), and thus is crucial to marketing innovation.

In a survey conducted by Okpara (2011) of 211 small business owners and managers located in selected cities in Nigeria, financial constraints, poor managerial skills, corruption, and poor infrastructure are some of the identified factors hindering the growth and survival of small business in Nigeria. For small business to succeed in Nigeria, Okpara (2011) emphasised the significance of a stable and supportive environment, a corruption-free society, and a supportive government. In addition to the provision of easily accessed, efficient and effective financial support for Nigerian SMEs recommended by Okpara (2011), he emphasised the need to tackle management problems confronting the SMEs in the areas of accounting, marketing, and record keeping. His recommendations reveal the significance of the soft components of innovation process in the success of Nigerian SMEs.

### 2.2.2 Classifying the Obstacles to Nigerian SME Growth

The theoretical study of Ogechukwu and Latinwo (2010) identifies seven groups of obstacles to entrepreneurship development in Nigeria. These obstacles are described as follows.

#### *2.2.2.1 Economic Obstacles*

Countries that are faced with diverse economic obstacles are characterised with poor entrepreneurship capital accumulation. Financial capital is one of the basic requirements of entrepreneurship. In countries with low national income and low per capita income, accumulating capital for small or medium-sized enterprises can be very challenging. Insufficient individual financial power could impede economic

initiatives, creativity, innovation, entrepreneurship, effective decision making, team formation and sound managerial practices (Ogechukwu and Latinwo, 2010).

#### *2.2.2.2 Technological Backwardness*

Many countries are occupying the bottom positions on the technological ladder because they pay little or no attention to sound research. According to Ogechukwu and Latinwo (2010), where there is no research in any countries, there will be zero contribution to the technological additions. In such countries, there is continuous use of traditional expertise, instrument and techniques. The alternative may be to import the technologies from abroad at a very high cost. Business activities may come to a sudden halt if there is no adequate knowledge to make the technologies work in the case of breakdown. Technological backwardness often leads to labour inefficiency (Ogechukwu and Latinwo, 2010).

#### *2.2.2.3 Political Obstacles*

The political orientation of a country affects its entrepreneurs and their activities. Political instability is often accompanied by civil unrest, which can often lead to attacks on government infrastructure and business premises. Political stability promotes security and, to an extent, can assure the safety of the investment of the SMEs' owners. Also, a peaceful environment may be necessary for some business activities to thrive.

#### *2.2.2.4 Managerial Obstacles*

Management obstacles can either be internal or external obstacles. Most of the external obstacles emanate from the government, its institutions and agencies. These include improper coordination of the activities of SMEs and the activities of the monitoring institutions, double taxation, and faulty implementation and evaluation of support policies. Internal management obstacles include absence of management skills and attitudes, inability to respond appropriately to threatening business conditions, lack of clearly defined mission and objectives, lack of strict adherence to professional management practices, and the inability to select suitable equipment and other business resources.

#### *2.2.2.5 Behavioural Obstacles*

These affect both the owners of SMEs and the support agencies. Among other things, Ogechukwu and Latinwo (2010) identified: lack of behavioural codes and standards; absence of competence performance evaluation practices; unethical practices, unproductive attitudes and behaviour; absence of participatory or transformational leadership and followership behaviour; problems of distrust; workplace stress; centralisation of authority and undesirable interference in the operations of the development agencies; and lack of cooperation between the owners of SMEs and the support agencies, as some of the behavioural obstacles.

#### *2.2.2.6 Production Operation Problems*

These obstacles also limit the ability of Nigerian SMEs to compete on a global scale. According to Ogechukwu and Latinwo (2010), production operation problems include: incomplete information on the production technologies; inadequate technical capacity to assess, acquire and adapt technological knowledge and skills; lack of practical application of technical matters; insufficient access to improved production technologies resulting to the use of out-dated production techniques; unreliable access to raw materials and machine spare parts; lack of storage facilities for raw materials and finished goods; poor working condition for staff; poor manufacturing and quality control skills; and poor production structure and planning.

#### *2.2.2.7 Finance and Accounting Problems*

Nigerian SMEs have limited access to credit facilities because most of the commercial banks find it difficult to assess their risk premiums accurately (Aremu and Adeyemi, 2011). Nigerian SMEs are, on many occasions, unable to meet the requirements by most of the commercial banks for obtaining their credit facility. Such requirements may include high interest rates, collateral securities and repayment plans. Others include: poor accounting practices and orientations; the inability to assess the credit worthiness of customers; a lack of clearly defined financial objectives and strategies; the inability to employ financial experts; a lack of financial discipline; and the merging of personal accounts with business accounts.

Similarly, findings from Okpara (2011) reveal that the common factors militating against small business growth and survival in Nigeria include lack of financial support; poor management; corruption; lack of training and experience; poor infrastructure;

insufficient profits; and low demand for product and services. These constraints can be classified into three groups: internal; external; and government-related factors, as shown in Table 2.4.

**Table 2.4: Classifying Nigerian SME Growth Constraints**

| **Nigerian SME growth and survival constraints:** | Nature of the Constraints | | |
|---|---|---|---|
| | Internal | External | Government-related |
| Poor management | * | | |
| Insufficient staff training and experience | * | | |
| Insufficient profits | * | | |
| Low demand for products and services | * | * | |
| Inability to access external supports | * | * | * |
| Corruption | * | * | * |
| Lack of financial support | | * | * |
| Poor infrastructure | | | * |

Thus, the problems of Nigerian SMEs go beyond limited financial support, corruption and poor infrastructure in the country.

## 2.3 Efficiency of Innovation Processes in SMEs

Findings from a literature review by Hoffman et al. (1998) on small firms, R&D, technology and innovation in the UK reveals that several policies and support structures are being put in place to promote innovation within SMEs, because of their roles in the employment creation and economic growth. According to Hoffman et al. (1998), some of the determinants of the SME innovative activity and economic success include: qualified scientists and engineers; strong leadership; the nature of the commercialisation and marketing effort; the degree of marketing involvement in product planning; and firm competence in technology management. Several studies were carried out to establish the link between SMEs performance and innovation, but Hoffman et al. (1998) argued that many of the studies showed insufficient analytical treatment of innovation activities within SMEs, and many of the studies were unable to establish a link between innovative inputs and outputs. According to Hoffman et al. (1998), previous findings revealed that SMEs were highly innovative across sectors, but purely based on qualitative measures and subjective perceptions and suggested the need to quantitatively measure the innovative efforts of SMEs and their corresponding outputs.

Rosenbusch et al. (2010) carried out a quantitative and systematic analysis of the innovation-performance relationships on 21,270 SMEs. They provided aggregate analysis of empirical studies with respect to the innovation-performance relationship in SMEs and found that innovation activities and innovation orientation would create value for both new and established SMEs. Strategic innovation orientation showed great impact on firm performance because it leads to setting more realistic goals; allocating and using resources efficiently; creating an inspiring firm culture; and developing proactive and productive measures to solving problems and managing risks (Rosenbusch et al., 2010).

Contrary to the findings that external collaborations and networking give rise to a better firm performance while embarking on innovative projects (Zeng et al., 2010; Cosh et al., 2005; Zhang et al., 2006), Rosenbusch et al. (2010) identified that internal innovation projects lead to greater firm performance than innovation projects with external partners. They further showed that innovation outputs are not commensurate with the innovation efforts and called for a thorough investigation of the efficiency of innovation activities in SMEs, and of how to effectively manage SMEs and their innovation process. It is important to note that one of the ways through which innovation activities in SMEs can be encouraged is that these innovation activities are capable of being turned readily into marketable outputs. Thus, this calls for a thorough investigation within the context of SMEs on how to get more marketable outputs from the inputs for innovation activities.

## 2.4 Improving Innovation Activities in SMEs

### 2.4.1 Information communication technology (ICT)

Several studies have been undertaken towards identifying a means by which innovation activities can be improved among SMEs. Dibrell et al. (2008) investigated the relationships between innovation, Information Technology (IT), and performance in SMEs and found that product and process innovations showed strong linkages with IT and that IT was positively related to performance. While investment in IT shows direct impact on profitability and growth, both product and process innovations have indirect impact on these measures of performance (Dibrell et al., 2008). This implies that investing in innovative activities, even when these activities are not directly linked to a particular product or process, can be rewarding in the long run. Integrating

innovation strategy with investment in IT has been shown to enhance firms' performance with respect to profitability and growth.

### 2.4.2 Rivalry and competition

Ferrari and Goethals (2010) highlighted the importance of integrating rivalry and competition to modern innovative discoveries. Management experts often focus on collaboration and cooperation in an attempt to encourage creativity, but companies such as General Electric, and IBM also used competition and productive rivalry to generate new ideas (Ferrari and Goethals, 2010). They argued that a healthy and productive rivalry should include team formation, methods to appreciate differences, and judgement mechanisms to bring in the opinions of customers. Naidoo (2010) showed that competition and good inter-functional capabilities improved marketing innovation capabilities for the Chinese manufacturing SMEs, investigated in his study.

### 2.4.3 Collaboration

Collaboration can also contribute to firms' innovative capability (Cosh et al., 2005; Zhang et al., 2006). According to Zhang et al. (2006), SMEs are known for limited managerial capabilities in addition to their limited abilities to access knowledge from external sources. This implies that a firm's ability to collaborate with external sources of business support contributes to its ability to be innovative. In fact, innovation and collaboration have mutual benefits. Collaboration helps firms to develop their innovative capability. Innovative firms are also better placed in utilising external relationships and knowledge in their activities. To sustain innovations at high scale, large firms are often seen to form alliances and collaborative arrangements with other specialised firms (Yusuf, 2009). Innovation activities are increasingly becoming more difficult thereby necessitating a close collaboration between a number of fields of expertise (Pallot and Pawar, 2008).

### 2.4.4 Innovation and total quality management

Some studies have been carried out to investigate the impact of Total Quality Management (TQM) on innovation capability and performance of firms (c.f. Hoang et al., 2006; Taddese and Osada, 2010). According to Hoang et al. (2006), leadership and people management; process and strategic management; and open organisation are TQM practices that show a positive impact on the firm's innovation capability.

There is evidence of tremendous developments through TQM practices in some developing countries, despite their various challenges (Taddese and Osada, 2010). The application of TQM to process and technology innovation has been seen to be successful because it has the potential to bring about a culture change (Taddese and Osada, 2010). From this, it can be deduced that TQM creates a clear boundary between the country and the industry. The TQM organisation is a unique entity with its own unique culture which can sometimes be different from that of its host country if the need arises.

Taddese and Osada (2010) argue that if SMEs do not have sufficient resources to invest in R&D, they can focus on developing their human resources and creating a corporate culture that encourages innovation. With process understanding, process improvement and technology learning, innovation capabilities have been fostered among some SMEs in India using the concept of TQM, despite limited investment in R&D (Taddese and Osada, 2010).

### 2.5 The Innovation System

An innovation system is a process in which knowledge is accumulated and applied by enterprises and/or their agents through complex interactions supported and conditioned by the organisations, social and economic institutions (Agwu et al., 2008). According to this definition, an innovation system involves generating, diffusing, adapting, and using knowledge. The definition further identifies some of the elements of the innovation system, namely: the individuals in the organisation; the interactive learning that occurs in the organisation; and the institutions that govern how the interactions and the processes occur (Agwu et al., 2008). Their concept of an innovation system is built on the following assumptions: innovation takes place everywhere in the society; innovation should promote economic development; formal research is a component of an innovation system; innovation is embedded in the prevailing economic structure; an innovation process requires team work by individuals with diversified knowledge; an institutional framework drives socio-economic development rather than technological change; innovation is an interactive process which determines what is to be learnt and where they will be put to use; linkages among components of the innovation system are as crucial as investment in research and development; innovation can be generated from adaptation, imitation,

adoption, and application of new technology and/or knowledge; innovation includes institutional knowledge, organisational knowledge, managerial knowledge, technical change, and novelty; and continuous learning is a prerequisite for innovation, and opportunity to learn is a function of the intensity of interactions among the individual involved.

Innovation encourages economic development (Saadoun and Yanning, 2006). It is important because it gives rise to higher rates of economic growth; growth in income, output and productivity; increased exports and trade; greater business margins and improved international competiveness.

## 2.6 Innovation and Competitive Advantage

Innovation is defined as an iterative process that creates new products, processes, knowledge or services through the use of new or existing knowledge (Kusiak, 2009). For O'Regan et al. (2006b), the innovation process creates new products and/or processes to enhance competitiveness and increase overall profitability. In the contemporary marketplace, business organisations cannot survive without creativity, innovation, new discovery and inventiveness (Martins and Terblanche, 2003). Due to persistent changes in the market demands and rapid technological progress, innovation activities are becoming more complex, expensive, and increasingly unpredictable (Kaminski et al., 2008). Innovation provides opportunities for change in every organisation; this can be a response to internal or external changes or a move to influence the environment (Hoq and Ha, 2009).

Innovation is a fundamental instrument of growth strategies to enter new markets in order to increase the existing market share and give a competitive edge to firms (Gunday et al., 2011). It is an essential component of firm growth, competiveness and survival. The ultimate goal of implementing innovation and its related activities is organisational performance (Lin and Che, 2007). According to Gunday et al. (2011) and Kuratko et al. (2005), innovation constitutes an essential element of the corporate strategies because of the following reasons:

- Innovation allows firms to apply more productive manufacturing processes.
- It helps firms to perform better in the market.
- It helps firms to seek a positive reputation in customers' perception.

- Innovation gives strategic orientation geared towards overcoming the problems encountered by the firms.
- It enables firms to achieve a sustainable competitive advantage.

Innovation should, therefore, be a dominant factor for consideration for companies pursuing excellence, viability, organisational growth, and global competiveness, particularly in this era of hyper competition (Li and Che, 2007; Gaynor, 2002). Li and Che (2007) argue that restructuring; lowering costs; and enhancing product or service quality, are no longer sufficient for organisational survival. They call for the institutionalisation of innovation in companies through a suitable organisational culture, structure, incentives, systems and processes. Gaynor (2002) posits that innovation does not necessarily require people with an outstanding talent, but a system-wide commitment to pursue innovation. In the innovation literature, one of the recent primary research areas has been focussing on the relationship between innovation types and firm performance (Gunday et al., 2011). They found that conceptual, analytical and empirical studies examining the relationship between innovation types and firm performance are limited with respect to the numbers, the extent and the depth of the analysis.

## 2.7 Dimensions and Types of Innovative Changes

Innovation in firms can take many forms (Bessant and Tidd, 2007). In fact, many authors have used different dimensions to classify innovation activities such that there are several types of innovation.

A broader framework other than technological product and process innovation proposed by the Organisation for Economic Co-operation and Development (OECD) and the Statistical Office of the European Communities in the Oslo Manual distinguishes innovation in four main areas. The Oslo Manual, among other things, specifies the guidelines for collecting and interpreting innovation data.

According to the manual, the four types of innovation are Process, Product, Organisational, and Marketing Innovations; the latter two being more recently considered necessary because of the need to create a more complete framework and identify the full range of innovative changes that guarantee improved firm's

performance and successful economic outcomes (OECD/Eurostat, 2005). These four types are defined as:

- Product innovations: innovations that represent significant changes to goods and services.
- Process innovations: innovative activities that represent significant changes in methods of production and delivery.
- Organisational innovations: innovative changes that facilitate and/or involve the implementation of new organisational methods.
- Marketing innovations: innovative changes that involve the implementation of new marketing methods such as new or significant changes in product design and packaging, product promotion and placement, and pricing methods.

Bessant and Tidd (2007) further identified four dimensions of innovative change: product innovation, process innovation, position innovation, and paradigm innovation, defining each dimension as follows: Product innovations, are changes in the product offered by the firm; Process innovations, defined as changes in the ways by which products are created and delivered; Position innovations, viewed as changes in the context in which the product is introduced; while Paradigm innovation, defined as changes in the underlying mental models which dictate the firm's actions.

For Andriopoulos and Dawson (2009), however, innovation can take the following forms: Product innovation defined as innovative activities involved in the development of a new or improved product; Service innovation refers to innovative activities associated with the development of new or improved services; Process innovation, are activities that focus on improving processes rather than end products or services; Management innovation, defined as new management practices that aim to reduce costs, improve quality and increase productivity; while Market/position innovation involves the creation of new markets to enhance a firm's competitive advantage.

Conway and Steward (2009) viewed the innovation process from four different perspectives: management; social; political; and emotional, which can be applied to any of the following areas: product, service, process, administration, delivery, marketing, business model, and institutions (Conway and Steward, 2009). Detailed

descriptions of each of the innovation types identified by Conway and Steward (2009) are shown in Table 2.5.

**Table 2.5: Conway and Steward's Types of Innovation**

| Innovation Type | Definition and Examples |
|---|---|
| Product | This includes a novel tangible artefact based on high or low technology and aimed at individuals or organisations, to include high-tech computers, low-tech ready-made meals, mobile phones, new building equipment and materials. |
| Service | The undertaking of a novel activity for individual or organisation, such as online grocery shopping and home delivery service. |
| Process | Involves novel technological processes such as DNA fingerprinting. |
| Organisational / Administrative | Involves novelty in the undertaking of tasks within the organisation such as TQM, virtual team-working. |
| Delivery | Novelty in the delivery of products or services. |
| Marketing | Novelty in the marketing of products or services such as product placement in films. |
| Business model | Involves novelty in the drivers of an organisation's activities or strategy. |
| Institutions | The establishment of an organisation with an innovative and a novel role such as the United Nations, the British National Health Service. |

(Source: Conway and Steward, 2009 p. 14)

## 2.8 Classifying Innovation Types

The current research attempts to classify all of the innovation types identified above into four main groups, as follows:

- Group One: Innovation in the firm's output(s). This includes product and service innovation.
- Group Two: Innovation in the mechanism(s) that is/are directly involved in the production of the output(s). This includes process innovation.
- Group Three: Innovation in the mechanism(s) that is/are indirectly involved in the production of the output(s). This group includes Organisational, Business Model, Institutional, Administrative, Management, and Paradigm Innovations.
- Group Four: Innovation in the systems or in the mechanisms that convey the output(s) from the firm to the users. The group includes Delivery, Position, and Market Innovations.

Table 2.6 shows the identified innovation types and the sources.

**Table 2.6: Classes of Innovative Changes**

| Authors | Year | Innovation Types | | | |
|---|---|---|---|---|---|
| | | Group one | Group two | Group three | Group four |
| OECD/Eurostat | 2005 | Product | Process | Organisational | Marketing |
| Bessant & Tidd | 2007 | Product | Process | Paradigm | Position |
| Andriopoulos & Dawson | 2009 | Product, Service | Process | Management | Market, Position |
| Conway & Steward | 2009 | Product, Service | Process | Business model, Institutional, Administration | Delivery, Marketing |

From Table 2.6, innovation types in groups one, two, three, and four can be classified and collectively referred to as product, process, organisational and marketing innovations, respectively. Such classification is based on the definitions of various types of innovative changes obtained from the literature. The research identifies four main groups of innovative changes, and further findings for each of the groups are addressed in the following sections.

### 2.8.1 Product innovations

Product innovations utilise new or existing knowledge or technologies or their combinations to introduce a new or a significantly improved good or service with respect to its intended uses or characteristics (OECD/Eurostat, 2005). Product innovations include different types of new products which can either be new to the market or to the firm (Salavou et al., 2004). The research work by Ray and Ray (2011) reveals the significance of product innovation for the emerging economies. The study provides critical insights into how to diffuse innovative products to emerging markets. The well-to-do consumers in emerging and developing economies can afford to buy the product offerings from the multinational companies, but these products are often too expensive for the masses at the base of the pyramid (Ray and Ray, 2011).

Innovative products for the masses in the developing nations come with many challenges due to large income disparities between the affluent few and the masses. According to Dawar and Chattopadhyay (2002), Prabhu and Krishnan (2005), and Ray and Ray (2011), the majority of consumers in the developing nations are price sensitive and not willing to pay for the unnecessary and avoidable features that add to

costs, but do not necessarily affect the basic functionalities of the products. According to Salavou et al. (2004), market and learning orientations appear to be more appropriate for developing product innovations rather than focussing on technology acquisition. The firm's ability to exhibit product innovations is determined by both inward and outward focus (Salavou et al., 2004).

The research by Yuan et al. (2010) reveals that product innovation does not always guarantee pleasing economic returns to the innovating firms. Findings by Yuan et al. (2010) reveal the importance and moderating effect of strategic flexibility between product innovation and firm performance. Their dimensions of strategic flexibility include resource flexibility and coordination flexibility. While the resource flexibility shows negative moderating effect between product innovation and firm performance, the coordination flexibility shows positive correlation. According to Ahn et al. (2010), the optimal allocation of resources towards a successful product innovation by any firm requires an effective assessment and selection of projects.

### 2.8.2 Process innovations

These include new or significantly improved methods involved in the creation and delivery of goods and services, and all the new or significantly improved techniques, equipment and software for ancillary support services (OECD/Eurostat, 2005). Technology acquisition embodied in machinery and equipment plays a crucial role in successful process innovations (Goedhuys and Veugelers, 2012). As revealed by the findings of Goedhuys and Veugelers (2012), a firm's absorptive capacity, trade, foreign direct investment, and migration of human capital are essential elements that aid the diffusion of technological process product innovations.

While investigating the factors that drive technological process and product innovations in Brazilian firms and their significance to innovative performance and firm growth, Goedhuys and Veugelers (2012) found that process innovation requires a less complex path, less knowledge inputs and absorptive capacity when compared with product innovation.

### 2.8.3 Organisational innovations

Organisational innovations are results of management's strategic decisions emerging from the implementation of organisational methods that have never been used before

in the firm (OECD/Eurostat, 2005). According to OECD/Eurostat (2005), the new organisational methods can be in business practices, workplace organisation or in external relations as enumerated below.

- Business practices: Organisational innovations focus on new methods for organising routines and procedures.
- Workplace organisation: Organisational innovations focus on new methods for distributing responsibilities, making decisions, structuring and integrating business activities.
- External relations: Organisational innovations focus on new methods for establishing relationships, integration and collaborations with customers, suppliers, other firms, research institutions, and other support agencies.

According to Lam (2005), organisational innovation could be a necessary foundation for technological process product innovation. It is important to note that firm's organisational innovations are not merely a formulation of improvement strategies, but the actual implementation of organisational methods, which have not been used by the firm before (OECD/Eurostat, 2005). According to Teece (2008), organisational innovation is as significant, if not more than, as technological innovation in value creation. Organisational innovation forms an essential part of the innovation system for many large organisations with evidence of statistically significant improvements in firm performance, some of the achievements through organisational innovations can be seen in Teece (2008).

DTI (2006), Andriopoulos and Dawson (2009), and Wang et al. (2009) used the term "management innovation" to describe some of the concepts that apply to the organisational innovation. According to DTI (2006), management innovations are strategic changes to organisational structure that lead to improvement in management related activities. Andriopoulos and Dawson (2009) defined management innovation as new management practices that aim to reduce costs, improve quality and increase productivity. Wang et al. (2009) described management innovation as a core and essential ingredient required to build core competitive advantages for firms in order to achieve better performance in a highly competitive market. The core competence, which emphasises skills, knowledge, and values, originates within organisations that are equipped with highly efficient management capabilities (Wang et al., 2009). It is

therefore a pathway that links the present state of an organisation to its future state; this is because it involves making the best use of resources to develop a more reliable and effective management system with brand advantages (Wang et al., 2009).

According to Wang et al. (2009), while management innovation may not have a direct and quantifiable impact on manufacture and operation; it plays a unique role in long term survival and development of any enterprises. The transformation of China's economy from labour-intensive to technology-intensive requires the implementation of management innovation (Wang et al., 2009). This reveals the significance of management or organisational innovation.

### 2.8.4 Marketing innovations

Marketing innovations involve the implementation of new marketing methods not previously used by the firm to focus on addressing customer needs, opening up new markets, or positioning a product on the market with the sole aim of increasing the company's sales (OECD/Eurostat, 2005). According to Dibrell et al. (2008), SMEs show a very slow response or sometimes are not able to respond to change in market expectations and opportunities, because they fail to acquire necessary innovative capabilities.

Small firms have a strong ability to invent because they are very close to the customers, but their main problem is in the commercialisation of their inventions, that is, achieving effective innovation (O'Regan et al., 2006a; Van de Vrande et al., 2009; Gans and Stern, 2003). For instance, 78.1% of SMEs, in the research study by Amara et al. (2008), develop product and process innovations, but the challenge is simply on how to increase the degree of novelty of these innovations so as to improve the firm's competitive advantage and create new markets. This reveals the need to focus on the innovation system in a more comprehensive way so as to have the desired market outputs of innovation activities.

Liao and Rice (2010) employ the market transformation outcomes of Schumpeterian models and find out that firm performance is positively influenced by its innovation activities if only they are mediated through these outcomes. These outcomes include the range of products, distribution mechanisms and market targets. These outcomes can be addressed easily by activities associated with marketing innovations. In their

survey and analysis of 449 Australian manufacturing SMEs, Liao and Rice (2010) found that innovation activities that focus only on primary R&D, training, and increase the use of production technology, only form a necessary, but not sufficient, prerequisite to improve firm competitive performance. Their work reveals the essential and mediating roles of market engagement between innovation capabilities and firm performance.

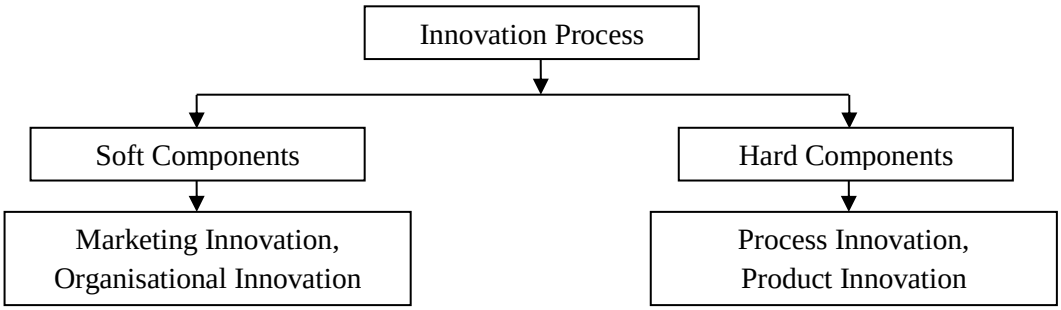
Trans-national corporations in developing nations can be a crucial source of technological innovations and enhanced economic performance for SMEs through subcontracting relationships (Sudhir-Kumar and Bala-Subrahmanya, 2010), but it should be noted that these relationships have a lot to do with the market orientation of these SMEs. As revealed in the results of their study of 333 technology-innovative South Korean SMEs, Rhee et al. (2010) found that market and entrepreneurial orientations positively affect the learning orientation, which significantly and positively influences the innovativeness and performance of these small firms. Van de Vrande et al. (2009) reveal how SMEs in the Netherlands are using the concept of open innovation to monitor competitors, focus on the need of their current market and to open up new markets.

The conceptual model of Naidoo (2010) further highlights the importance of marketing innovation to firm survival. The adoption of a market orientation by firms is crucial to the development of marketing innovation capabilities, which are in turn needed to build and sustain firms' competitive advantage and surviving strategies in an economic crisis (Naidoo, 2010). Competitive advantage developed and sustained through marketing innovation has proven to play vital roles in the survival of Chinese manufacturing SMEs (Naidoo, 2010).

### 2.8.5 Soft and Hard Soft Components of Innovation Process

From these four main types of innovations, process and product innovations can be grouped as the hard components, while the other two, organisational and marketing innovations, are the soft components of innovation process (SCIP), as shown in Figure 2.1.

**Figure 2.1: Soft and Hard Components of Innovation**




Of the four groups of innovation identified in this study, only two, product and process innovations, have significant attention in the literature (OECD/Eurostat, 2005; Edquist, 2009; Naido, 2010; Salavou et al., 2004). According to Naido (2010) and Augusto and Coelho (2009), marketing innovation needs to be fully researched and thorough scrutiny. Salavou et al. (2004) further reveal that the relationship between market orientation and innovation process has received little attention from researchers. According to Edquist (2009) "…the non-technological forms of innovation deserve more attention…and that there are strong reasons to use a comprehensive innovation concept and give more attention to non-technological and intangible kinds of innovation…" While the previous research work on innovation traditionally focuses on technological innovations (Conway and Steward, 2009), organisational and marketing innovations, which are needed to facilitate and sustain the entire innovation process in developing countries, are often left out or not given the needed attention (Lam, 2005; OECD/Eurostat, 2005). According to Morton and Burns (2009), innovation is not limited to significant changes in process and product technology. It also encompasses many improvement ideas in a factory environment.

## 2.9 Novelty in Innovative Changes

The novelty involved in any improvement process is an important measure that distinguishes the terms 'change' and 'innovation' (Conway and Steward, 2009). The degree of novelty involved in the innovation process is another way of classifying the innovation process (Bessant and Tidd, 2007). The focus of the innovation process is not only on the change that occurs, but also the novelty or level of change involved in

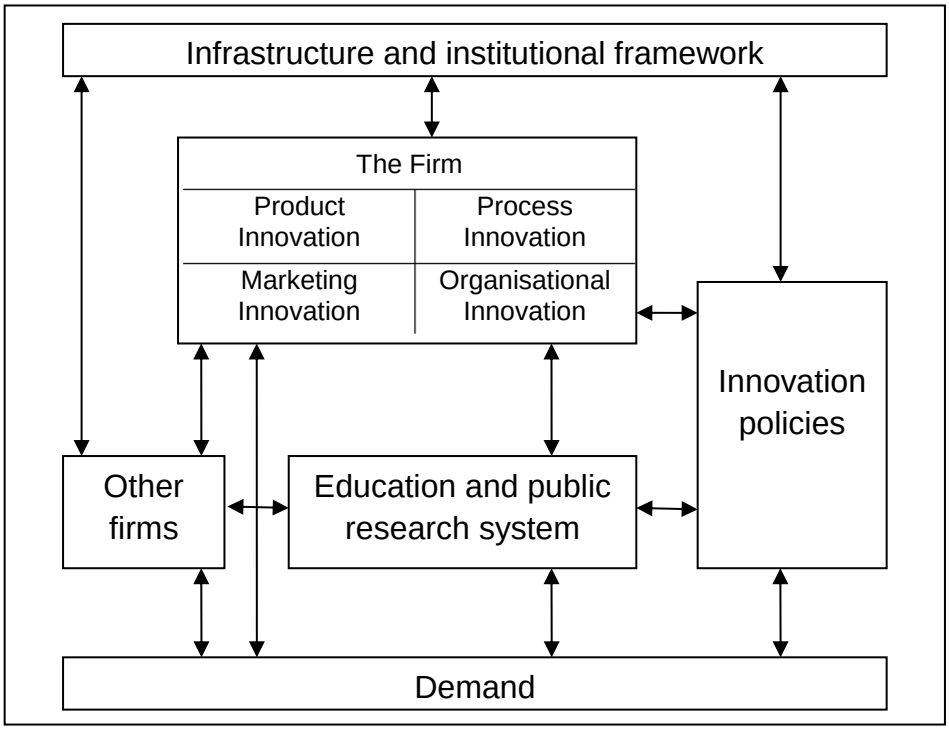
the process (Conway and Steward, 2009). According to Andriopoulos and Dawson (2009), innovation changes can be classified into three different levels, as follows:

- Incremental Innovations: involve small changes to existing products or services.
- Modular Innovations: are middle-range innovations with more pronounced changes than simple product or service improvements.
- Radical Innovations: require entirely new knowledge and capabilities and often accomplished by new products or services.

### 2.10 The Innovation Framework

Firms and their performance are often the target of the innovation survey (OECD/Eurostat, 2005). In an attempt to have a framework from the perspective of the firm, OECD/Eurostat (2005) proposed a framework that shows the details of the innovation system required within the firm; the linkages with other firms and public research institutions; the institutional framework in which the firm operates; and the role of demand, as shown in Figure 2.2. Three extended activities are crucial to the innovation process and these are: generating innovation possibilities; selecting the most feasible idea from the options; and implementing the innovation process (Bessant and Tidd, 2007).

**Figure 2.2: Innovation Measurement Framework**

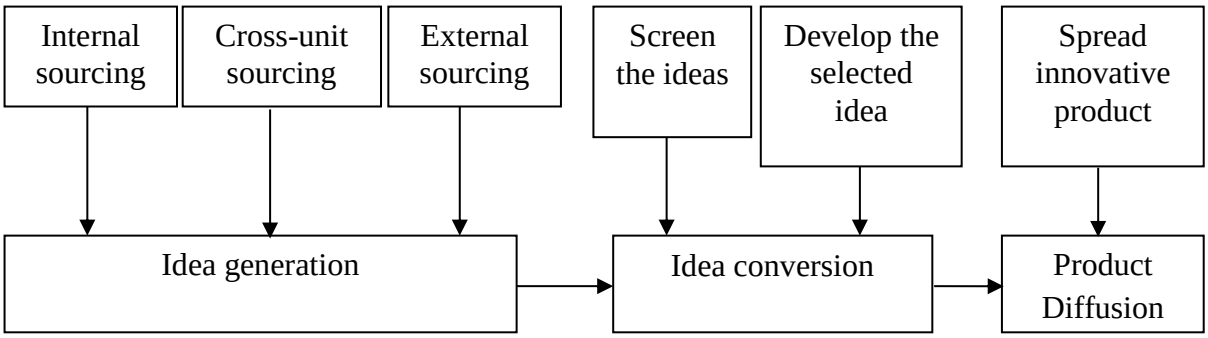



Source: OECD/Eurostat (2005)

Hansen and Birkinshaw (2007) propose a very similar framework. This important framework reveals the need for an end-to-end view of innovation efforts. This is because different companies face different innovation challenges and therefore each company requires different solutions (Hansen and Birkinshaw, 2007). The framework focuses and highlights the sequence of activities carried out by the firm. The aim is to identify the weakest link in the innovation value chain for each firm, rather than developing a universal solution for solving innovation problems for all (Hansen and Birkinshaw, 2007).

According to Hansen and Birkinshaw (2007), firms are different from one another; each with its unique challenges. According to them, applying a single solution to improve the innovation capabilities of different firms may be disastrous, because firms are faced with different obstacles. The framework encourages an end-to-end view of the innovation activities for each firm, in order to apply appropriate measures of improvement where they are needed in the innovation value chain. The framework contains a sequence of processes, attached to which are three different phases and six critical tasks for the innovation value chain, as shown in Figure 2.3.

**Figure 2.3: Innovation Value Chain**




(Adapted from Hansen and Birkinshaw, 2007)

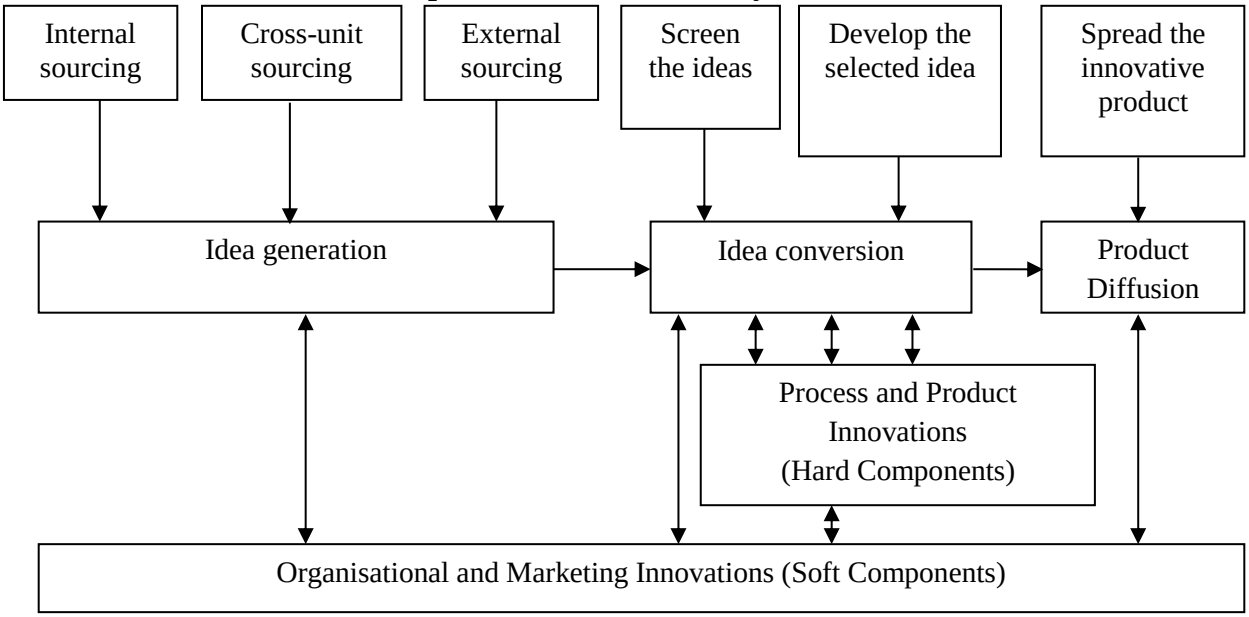
The phases include idea generation, idea development, and the diffusion of developed concepts. The tasks are as follows:

- Collaboration within units (internal sourcing)
- Collaboration across units (cross-unit sourcing)
- Collaboration with outside parties (external sourcing)
- Screen the ideas
- Develop the selected idea
- Spread the innovative product (product sale)

Each of the tasks is a link in the innovation value chain, and the improvement measures focus on identifying the weak and the strong links.

The four types of innovations identified in the innovation measurement framework in Figure 2.2 can be linked to the innovation value chain in Figure 2.3. While the idea conversion phase requires more of the application of process and product innovations (the hard components), this research suggests that all three phases require the application of organisational and marketing innovations (the soft components), as shown in Figure 2.4.

**Figure 2.4: Linking the Innovation Value Chain to the Soft and the Hard Components of Innovation System**




(Adapted from Hansen and Birkinshaw, 2007)

Figure 2.4 reveals the essential roles of organisational and marketing innovations to the innovation activities of every firm. Internal capabilities and external competiveness are both needed and significant in the survival of firms in this unpredictable business environment. While product innovation tends to focus more on the external competiveness, process innovation tends to focus more on the internal capabilities. However, each of the soft components of the innovation process contributes to both the internal capabilities and external competiveness. For instance, marketing innovation focuses on external competiveness and also contributes to the development of the internal capabilities through customers' feedbacks. In the same vein, organisational innovation focuses on building a competitive structure that

simultaneously contributes to the internal capabilities and external competiveness of the firm.

Bessant and Tidd (2009) advise against having partial models for the innovation process because they often yield undesirable results for firms. Their opinions are summarised in Table 2.7. This also supports the significance of Figure 2.4, which links the innovation value chain to soft and hard components of the Innovation System.

**Table 2.7: Problems with Partial Models (Modified)**

| S/N | Partial Models- Innovation is only: | Consequences |
|---|---|---|
| **1** | Strong R&D capability | Technology fails to meet user needs and may not be accepted |
| **2** | Province of scientists and specialists in the R&D laboratory | Lack of involvement of others, their key knowledge and experience input from their perspectives |
| **3** | Technology advances | Producing products not needed in the markets and processes that fail to meet the needs of the user |
| **4** | The province only of large firms | Weak small firms |
| **5** | Only about breakthrough changes | Neglecting the potential of incremental innovation |
| **6** | Only associated with key individuals | Failure to utilise the creativity of other employees |
| **7** | Only internally generated | External good ideas are resisted or rejected |
| **8** | Only externally generated | Little internal learning or development of technological competence |

(Source: Bessant and Tidd, 2009 p.17)

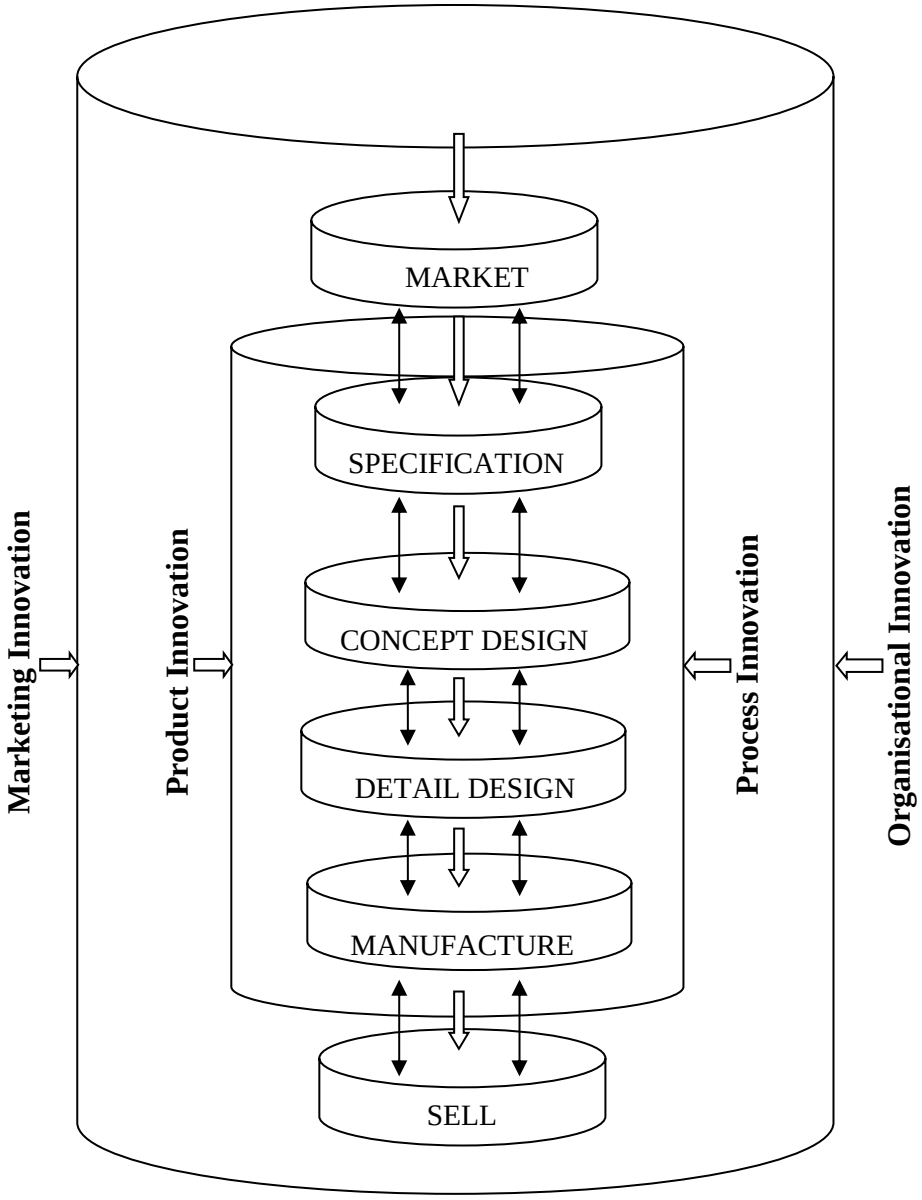
## 2.11 Innovation in Product Development

The total design concept by Pugh (1991) enumerates the systematic activities required to create a new product from the identification of the user need, to the selling of the successful product. According to Pugh (1991 p. 5), total design is "an activity that encompasses product, process, people and organisation". The design core of the total design concept consists of market, product design specification, conceptual design, detail design, manufacture and sales (Pugh, 1991).

The total design concept reveals that the market/user needs represent the front line of any innovative product or service (Pugh, 1991). This is because many products have

failed in the market place, despite the deployment of modern and first-rated technology and production methods (Pugh, 1991). For instance, the failure of the Sinclair C5 electric car, as confirmed by the company's owner, "originated from a complete lack of investigation and understanding of the user need situation" (Pugh, 1991 p. 29). In fact, firms, small or large, can only keep up with changing markets and user needs through a constant development of new products and/or services (Abbing, 2010). It is interesting to note that each of these processes can be linked to the main types of innovation, as shown in Figure 2.5.

**Figure 2.5 Linking Innovation Types to Total Design Concept**




(Adapted from Pugh, 1991)

While process and product innovations show high relevance to product design specification, conceptual design, detail design, and manufacturing phases, this research suggests that all the six phases require the application of organisational and marketing innovations. This further reveals the significance of organisational and marketing innovations to the overall success of business activities from another perspective.

### 2.12 The Significance of the Soft Components of Innovation Process

Organisational and Marketing Innovations (OMIs) have been identified in this study as the soft components of innovation process; both of which are crucial for effective innovation in any organisations, irrespective of size, location and activities of the organisations. Organisational innovations are strongly related to the management efforts in renewing the organisational routines; procedures and other mechanisms that encourage teamwork; information sharing; effective coordination; collaboration; and learning (Gunday et al., 2011). Findings from the literature show that organisational innovation plays a fundamental role for innovative capabilities and performance (c.f. Gunday et al., 2011; Lin and Che, 2007). In addition to having a direct impact on the business innovative performance, organisational innovation prepares a suitable business and thriving environment for the other types of innovations (Gunday et al., 2011).

Organisational innovations, which Lin and Che (2007) described as administrative innovations in their research study, are found to be the most crucial factor in explaining a company's sales. According to the study, administrative innovations include, among other things, improvements in organisational structures, innovative policies, and transformation of management systems. Strategic innovation is concerned with organisational strategies that focus on continuous competitive advantages for companies. For instance, strategic innovation type includes alliances with competitors; alliances across industries; alliances with suppliers; outsourcing; and redefining the firm's core competence (Lin and Che, 2007). Based on the above description of administrative and strategic innovations, these two will be collectively referred to as organisational innovations in this study.

Lin and Che (2007) posit that real innovation success is in the marketplace, and that creating innovative marketing measures is crucial in transforming good ideas and

good products into a company's revenue and profit. The study of Schubert (2009) on the roles of marketing and organisational innovations (OMIs) in entrepreneurial innovation processes reveals that OMIs reinforce technological innovations. Also, findings from the empirical research by Battisti and Stoneman (2010) reveal that organisational and technological innovations are not substitutes but they complement each other.

The adoption of technological innovations by firms is not enough to gain competitive advantage, and the far-reaching benefits of technological innovations can only be achieved if they are accompanied by non-technological innovations (Battisti and Stoneman, 2010). While most studies on innovations focus only on one innovation type at a time, findings reveal that both organisational and marketing innovations have been under-researched (Battisti and Stoneman, 2010). They emphasise that robust empirical evidence on the existence of complementarity across innovation types is scarce, thereby making knowledge about the synergies among these innovation types limited. The lack of prior research on non-technological innovations has been attributed to poor data availability (Battisti and Stoneman, 2010; Schubert, 2009). According to Battisti and Stoneman (2010 p. 188), "…innovation that has not involved changes in processes and products has traditionally merited little effort in data collection".

Also, many empirical studies on firms' innovative capacity, innovation inputs and other support instruments do not take into account the complementary innovation strategies of marketing and organisational innovations (Nguyen and Mothe, 2008). Some theoretical studies on innovation, however, highlight the crucial roles of these non-technological types of innovations (Nguyen and Mothe, 2008). The study of Nguyen and Mothe (2008) highlights the effects of the complementary strategies of organisational and marketing innovations on the firms' technological innovation ability. Their findings reveal that marketing innovations provide a complementary innovation activity for both the tendency to innovate and the innovative performance of the firms. Nguyen and Mothe (2008) posit that the capacity of firms to innovate depends on the amount of marketing initiatives taken in support of the following:

- To increase customer satisfaction in comparison to competitors,
- To adapt successfully to changing customer needs,

- To discover and exploit new business ideas,
- To have access to new information and resources for creating new competitive products and processes.

Thus, this reveals that incremental and substantially new marketing initiatives (marketing innovations) seem to be the needed antecedents to firms' process and product innovations. It is interesting to note from Nguyen and Mothe (2008) that while marketing innovations support both the firms' propensity to innovate and the actual innovative performance, organisational innovations only support their propensity to innovative. This implies that while the firms' activities that relate to both organisational and marketing innovations advance the organisation's capacity to innovate, the organisation's activities that relate solely to marketing innovations focus on making the entire activities fruitful.

De Mel et al. (2009) propose an innovation model which incorporates the role of both the owner and the firm characteristics into the firms' innovation activities. This model reveals how product, process, marketing and organisational innovations vary with firm size and competition. Based on a large representative survey on micro and small firms from Sri Lanka, findings from De Mel et al. (2009) reveal that marketing innovations are the most common type of innovations among these firms. According to Ogechukwu and Latinwo (2010), SMEs need to adopt and apply a marketing concept in order to grow and survive in this prevailing business environment. For the owners and managers of SMEs to build up some dynamism in their operations, they should integrate strategic marketing planning into their overall strategy (Ogechukwu and Latinwo, 2010). Thus, it has been established that Organisational and Marketing Innovations show strong links to effective innovations. It is, therefore, important to explore factors promoting Organisational and Marketing Innovations capabilities (RQ1).

### 2.13 Organisational Ambidexterity

Organisational and Marketing Innovations capabilities can also be viewed as two ends of a continuum. While Organisational Innovation capability aligns to the company's exploratory capability, Marketing Innovation capability focuses on the company's exploitative capability. Findings from the literature reveal a growing need for organisations to maintain a balance between having sufficient exploitation activities to

ensure their current viability, and having adequate exploration activities to ensure its future viability (O'Reilly and Tushman, 2011; Lubatkin et al., 2006; Gibson and Birkinshaw, 2004). Organisational ambidexterity has two components; exploration and exploitation, which are crucial to the long-term organisational success (Raisch et al., 2009).

Recently, there has been a growing body of research examining how organisations achieve ambidexterity (Raisch et al., 2009). While some research studies suggest that organisations achieve ambidexterity through organisational mechanisms, such as formal structures and lateral coordination, other researchers argue that it is within the individual's ability to explore and exploit (Raisch et al., 2009). Findings from the literature reveal that research on organisational ambidexterity is still very limited (c.f. O'Reilly and Tushman, 2011; Andriopoulos and Lewis, 2009; Simsek, 2009; Lubatkin et al., 2006; He and Wong, 2004).

O'Reilly and Tushman (2011) relate organisational ambidexterity to dynamic capability, which is defined as the ability of a firm to leverage and reconfigure its existing internal and external skills, resources and competencies, in ways that are valuable to their customers and difficult for their competitors to copy. The focus of dynamic capability is on the changing nature of the business environment, and on the appropriate reconfiguration of the organisational resources towards the constantly changing business environment. As a dynamic capability, organisational ambidexterity is a complex set of routinised activities which include decentralisation, differentiation, targeted integration, and the ability of senior leadership to manage the trade-offs that characterised the simultaneous pursuit of exploration and exploitation activities (O'Reilly and Tushman, 2011). According to O'Reilly and Tushman (2011), organisations must be able to successfully exploit their current businesses, and explore new business opportunities by reconfiguring existing resources and growing new capabilities, for them to survive in the rapidly changing environment. Table 2.8 shows the summary of the research objectives of some of the selected studies on ambidexterity.

**Table 2.8: Summary of Exemplar Studies on Ambidexterity**

| Author(s) | Year | Exploitative Components | Explorative Components | Research Objectives / Outcomes |
|---|---|---|---|---|
| Damanpour and Gopalakrishnan (Theoretical study) | 1998 | Activities during the implementation and continuous use of innovative processes or products. | Pre-adoption activities that lead to a decision to adopt innovative processes or products. | The authors propose three structural theories of innovation (the dual-core theory, the theory of innovation radicalness and the ambidextrous theory of innovation). They also advance a series of propositions to predict the structural characteristics and adoption of innovation types under different environmental conditions. |
| Adler et al. (Empirical study) | 1999 | A focus on the routine tasks. | A focus on the non-routine tasks. | The authors identified ambidexterity as one of the four organisational mechanisms (meta-routines, partitioning, switching, and ambidexterity) used in the Toyota Production System to manage the efficiency and flexibility paradox. |
| Gibson and Birkinshaw (Empirical study) | 2004 | Proper positioning for efficiency in the management of today's business demands. | Reconfiguration of business activities to quickly meet changing in the task environment. | The authors found out that a context characterised by a combination of stretch, discipline, support, and trust would help in promoting contextual ambidexterity. |
| He and Wong (Empirical study) | 2004 | Successful operations in the mature markets where cost efficiency is dominant. | Preparedness for the emerging markets where experimentation, speed, and flexibility are important. | The authors examine the combined influence of exploration and exploitation on firm performance in the context of firm's approach to technological innovation. Their findings reveal that a balanced interaction between explorative and exploitative innovation strategies positively relates to sales growth and firm performance. |
| Atuahene-Gima (Empirical study) | 2005 | Investments in the existing product innovation capabilities. | Investments in the discovery of new product innovation capabilities. | Market orientation is crucial in managing the capability-rigidity paradox. Findings reveal that the effects of customer and competitor orientations on competence exploitation and exploration are differentially moderated by the inter-functional coordination and the perceived market opportunity. These orientations facilitate concurrent investments in exploiting existing product innovation competencies and exploring new ones. |
| Lubatkin et al. (Empirical study on SMEs) | 2006 | Optimising existing competences. | Discovery of new opportunities. | Top management team behavioural integration facilitates the process of managing the contrasting demands of organisational ambidexterity in SMEs. Their findings reveal that behavioural integration positively associates with ambidexterity and firm performance in SMEs |
| Venkatraman et al. (Empirical study) | 2007 | Deriving the maximum benefits possible in the | Exploration of the new product markets. | The authors distinguish between simultaneous and sequential forms of ambidexterity. The longitudinal study reveals that the positive impact of |

| | | | | |
|---|---|---|---|---|
| | | current product markets. | | strategic ambidexterity on firm performance, and on maintaining a balance between exploration and exploitation. |
| Raisch and Birkinshaw (Theoretical study) | 2008 | Alignment and efficiency in the management of today's business demands. | Adaptive to changes in the business environment. | The study's focus is on the review of the antecedents, moderators, and the outcomes of the emerging theory of organisational ambidexterity. |
| Simsek (Theoretical study) | 2009 | Organisational learning through local search, experiential refinement, and reuse of existing knowledge. | Organisational learning through processes of intensive variation and premeditated experimentation. | The study focuses on the multilevel explanation of organisational ambidexterity based on the review of its conceptualisation, antecedents, and consequences. |
| Cao et al. (Empirical study) | 2009 | Firm's resources towards exploitative activities. | Firm's resources towards explorative activities. | The authors propose two dimensions of ambidexterity (the balance and the combined dimensions). Findings reveal that firm's resource conditions differentially affect the performance consequences of the proposed two dimensions of ambidexterity. |
| Andriopoulos and Lewis (Theoretical study) | 2009 | Activities promote incremental innovations via the exploitation of existing products. | Activities foster radical innovations as a result of the exploration of new opportunities. | The study is about the qualitative study of the benefits of exploration and exploitation activities, and the use of both integration and differentiation approaches to manage exploitation-exploration tensions. |
| Charles et al. (Theoretical study) | 2011 | Activities that position the existing assets in a profit-producing way and facilitate the configuration of organisational resources to capture existing opportunities. | Activities that explore new technologies and markets and facilitate the reconfiguration of organisational resources to capture new opportunities | Ambidexterity is a dynamic capability that depends on the leadership ability in articulating a strategic intent and vision that justifies exploration and exploitation activities, and also in managing the inherent tensions between these two activities. |
| Lin and McDonough (Empirical study) | 2011 | Activities that build on an organisation's past accomplishments and actions. | Activities that create new capabilities and new approaches different from the organisation past. | Strategic leadership and knowledge-sharing culture are crucial in maintaining a balance between the contradictory forces of exploration and exploitation activities. |

The table shows how the researchers define the explorative and exploitative components of organisational ambidexterity Mom et al. (2009) investigate both the direct and the interaction effect of formal and personal coordination mechanisms on managers' ambidexterity. Although Gupta et al. (2006) argue that it may be very difficult for an individual to excel at exploration and exploitation activities, findings from Mom et al. (2009) empirically proves otherwise and reveal that "managers' exploration and exploitation activities are not mutually exclusive ends of a continuum". Their study demonstrates that some managers are indeed ambidextrous, whereas others are not. The study further reveals that personal coordination mechanisms and organisational structural mechanisms play crucial roles in managers' ambidexterity. While acknowledging the excellent works on organisational ambidexterity by each of these studies, ambidexterity at the individual level analysis, specifically at the shop floor level, is yet to receive the needed attention, as shown in the column for the research objectives and outcomes.

Firm's Absorptive Capacity is a closely related construct to Organisational Ambidexterity. Absorptive capacity has been defined as a firm's ability to be aware of the value of new, external information; assimilate it; and apply it to its commercial ends (Cohen and Levinthal, 1990). In a more comprehensive way, Zahra and George (2002) defined absorptive capacity as a set of organisational skills, routines and processes needed to identify, acquire, assimilate, modify, and use the implied component of transferred knowledge in solving problems. Absorptive capacity is the ability of a firm to recognise, acquire, assimilate, transform, and exploit knowledge from external sources through exploratory; transformative; and exploitative learning (Scott-Kemmis et al., 2008; Lane et al., 2006). While exploratory learning focuses on the recognition and understanding of external valuable knowledge, transformative learning focuses on the assimilation of the newly found knowledge, and exploitative learning focuses on using the assimilated knowledge to create new knowledge and marketable outputs (Lane et al., 2006). According to Scott-Kemmis et al. (2008), the recognition of opportunities arising from new knowledge about technology, customer's needs, and market trends, has a lot to do with the absorptive capacity of every firm**.**

Some of the identified crucial factors that have the potential to enhance a firm's absorptive capacity include organisational structures, human resource management practices (Schmidt, 2005), and organisational culture (Serradell-López and Grau-Alguero, 2010; Harrington and Guimaraes, 2005). It follows that organisational culture and structure have significant impacts on the absorptive capacity and innovation capacity of firms, and consequently, its overall performance. According to Harrington and Guimaraes (2005), organisational culture that encourages flexibility, change, efficiency, and goal setting enhances the absorptive capacity of firms.

### 2.13.1 Organisational Ambidexterity and SMEs

Findings from Lubatkin et al. (2006) reveal that SMEs may have neither the structural mechanisms that promote ambidexterity, nor the resources needed. They posit, however, that organisational ambidexterity can be achieved in SMEs through greater behavioural integration among the members of their top management team. Findings reveal that a positive association exists between family ownership and ambidexterity in SMEs. Due to the limited nature of their resources, SMEs may not be able to create structurally separate business units that focus on either exploitation or exploration. According to Lubatkin et al. (2006), the owners and managers of SMEs may however create a single business unit that is capable of pursing both.

Empirical findings by Cao et al. (2009) reveal that a focus on managing trade-offs between the exploration and exploitation demands may benefit firms with limited resources, while it is both possible and desirable for firms with sufficient resources to simultaneously meet the exploration and exploitation demands. There have been several works on the traditional concept of structural ambidexterity (Cao et al., 2009; O'Reilly and Tushman, 2011; Lubatkin et al., 2006; He and Wong, 2004). According to some of the authors, structural ambidexterity can be achieved by creating dual structures within a single business unit. This implies that structural ambidexterity requires two structural units to manage the competing demands of exploration and exploitation activities from time to time. This suggests that firms with limited resources, such as SMEs, may have no other option than to manage the trade-offs between the exploration and exploitation activities, as revealed in the findings of Cao et al. (2009).

Gibson and Birkinshaw (2004) propose the concept of contextual organisational ambidexterity. The empirical research by Gibson and Birkinshaw (2004) is the first study to identify and develop the concept of contextual ambidexterity. Contextual organisational ambidexterity differs from the structural form of ambidexterity; the former focuses on building processes and systems that empower and encourage individuals, the latter focuses on creating structural separations (Gibson and Birkinshaw, 2004). With contextual organisational ambidexterity, individuals make decisions on how to optimally manage their resources. This allows them to meet the conflicting demands for both exploration and exploitation activities. Gibson and Birkinshaw (2004) argue that every individual in a unit can concurrently deliver value to existing markets in his or her functional area, and also reacts appropriately to the changes in the task environment. According to Gibson and Birkinshaw (2004), contextual ambidexterity offers the following advantages over structural ambidexterity.

- Unlike structural ambidexterity, contextual ambidexterity does not just promote the adaptation of the separate business functions responsible for the development of new businesses, but facilitates the adaptation of an entire business unit. They argue that it is a more sustainable model than structural ambidexterity characterised by structural separations.
- Contextual ambidexterity eliminates the need for coordination between subunits, and thus avoids the problems and the costs associated with such coordination.
- Contextual ambidexterity supports the creation of a dynamic and flexible environment; an environment where individuals are allowed to use their initiatives as to how they divide their time and other resources between exploration-oriented activities and exploitation-oriented activities. In such an environment, both exploration-oriented activities and exploitation-oriented activities are rewarded.

Simultaneous advancement on both exploration and exploitation activities is a primary factor in firm survival and prosperity, and contextual ambidexterity should be a key driver of firm performance over the long term (Gibson and Birkinshaw, 2004). SMEs may continue to suffer the costs of experimentation for new discoveries while

losing many of their benefits to the large firms if they focus solely on exploration activities. In this case, the firms are known to be innovative but not reaping the rewards of innovation. Also, SMEs may not survive for long if they focus solely on exploitation activities. In this scenario, the firms are unable to meet the demands of the constantly changing markets. Contextual ambidexterity is evident in any firm where each of its employees is able to act accordingly from time to time (Gibson and Birkinshaw, 2004). Gibson and Birkinshaw (2004) opine that ambidexterity may be a characteristic of a business unit as a whole; it often starts with the specific actions of individuals throughout the business unit.

According to Goedhuys and Veugelers (2012) and Salavou et al. (2004), the ability of SMEs to develop innovative approaches to their business activities and/or embark on innovative projects is limited. This is because they are internally characterised by their limited resources. They often suffer higher failure rates when compared with large firms because of their reactive nature to problems, limited resources, informal strategies and structures (Terziovski, 2010; Qian and Li, 2003). Besides, market failures are common problems with SMEs, while their limited resources further limit their access to new innovations (Verheugen, 2003). For firms with limited resources, organisational ambidexterity emanating from behavioural capacity (contextual ambidexterity) is likely to be of greater benefit than one emanating from structural capacity.

### 2.13.2 Antecedents of Organisational Ambidexterity

There have been few studies that look into how a business unit becomes ambidextrous. Gibson and Birkinshaw (2004), with empirical evidence from the analysis of data collected from 41 business units, prove that an organisational context characterised by a combination of stretch, discipline, support, and trust promotes contextual ambidexterity. Lin and McDonough (2011) investigate the role of leadership and organisational culture in promoting ambidexterity. Their findings reveal that while strategic leadership directly impacts on a knowledge-sharing culture, a knowledge-sharing culture directly impacts on organisational ambidexterity. Also, leadership and top management team approaches have been found to be crucial to the development of structural ambidexterity (Smith, 2006; Smith and Tushman, 2005). Analysis of survey data from 139 SMEs, mainly at the CEOs and the Top Management Team

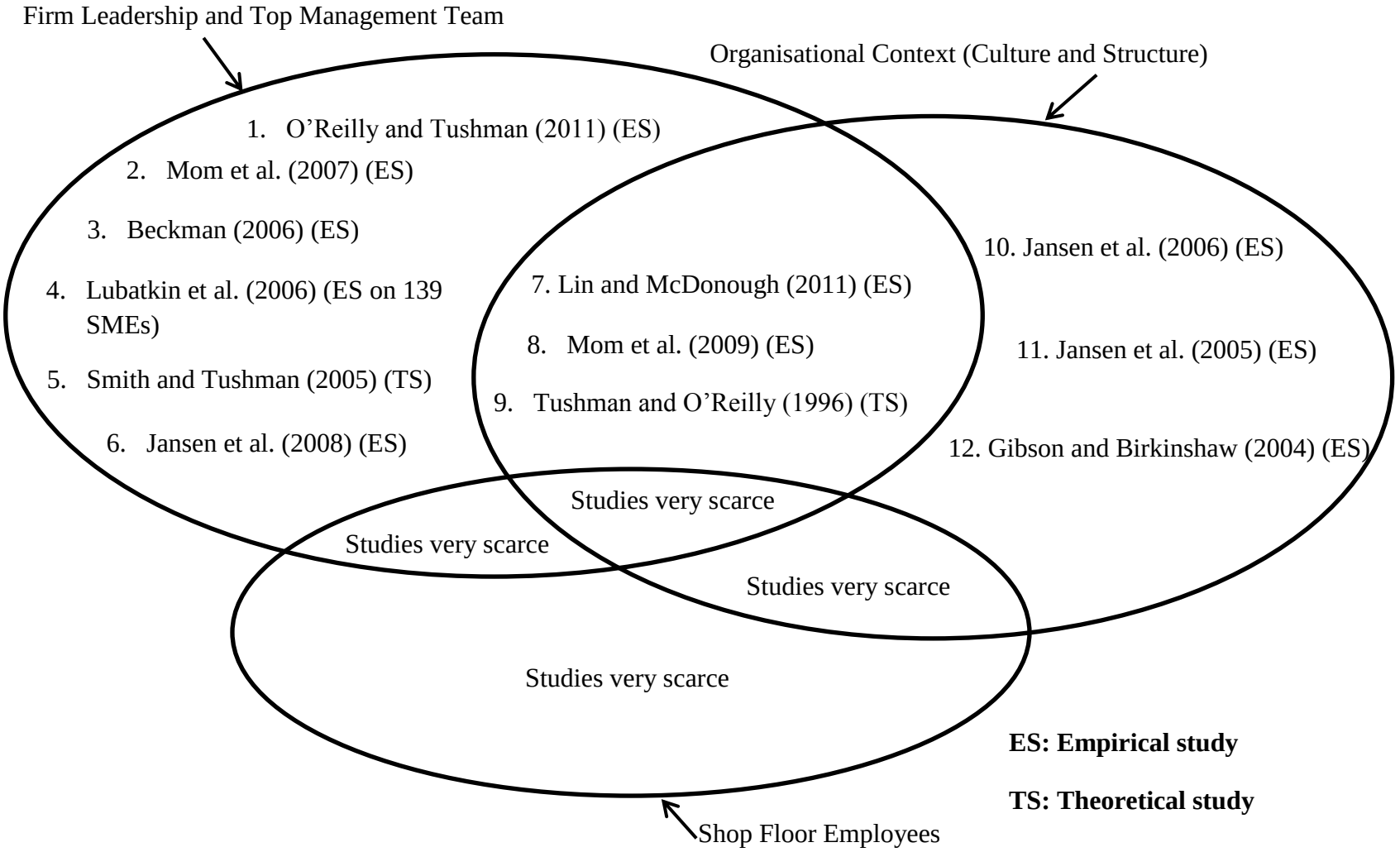
members, reveals that top management team behavioural integration is crucial to attaining ambidexterity in SMEs (Lubatkin et al., 2006). Jansen et al. (2008) reveal that a formal contingency rewards system coupled with an informal social integration for senior team members can help them manage the contradictory forces of organisational ambidexterity.

Gibson and Birkinshaw (2004) also describe the roles of top management teams in fostering contextual ambidexterity. O'Reilly and Tushman (2007) emphasise the importance of a clear strategic intent, an overarching vision and values, and an aligned leadership ability to effectively manage the trade-offs, to the development of organisational ambidexterity. A common culture and vision, supportive leaders, and flexible managers are also observed to be relevant antecedents to the development of structural ambidexterity (Tushman and O'Reilly, 1996). According to O'Reilly and Tushman (2011), firms are more likely to be ambidextrous, and successfully manage the trade-offs between their exploration and exploitation activities when all the following five conditions are in place:

- Evidence of a compelling strategic intent justifying the importance of both exploration and exploitation.
- An articulation of a common vision and values providing a unique identity across the exploitative and exploratory units.
- A senior team who unequivocally coordinates and constantly communicates the unit's strategy of exploration and exploitation, and also makes provision for a common-fate reward system.
- A provision for the separation and alignment of organisational architectures for the exploratory and exploitative units, and also for targeted integration at senior and other strategic levels to appropriately leverage organisational resources.
- Finally, the senior leadership is well equipped to tolerate and sort out the tensions coming from the separate alignments.

Previous studies on the antecedents of organisational ambidexterity focus on the composition of the firm leadership. There is a lack of attention on employees at lower levels of the organisation. Figure 2.6 shows the focus of the previous research on the antecedents of organisational ambidexterity.

**Figure 2.6: Examples of Previous Research Studies on the Antecedents of Organisational Ambidexterity**



In their study, Mom et al. (2009) propose the following characteristics for the ambidextrous managers:

1. Ambidextrous managers host contradictions. They have the motivation and the ability to identify, understand, and pursue a range of seemingly contradictory opportunities. For instance, while they search for new market needs and new technological opportunities, they are concurrently sensitive to strengthen and build on the current product-market positions.
2. Ambidextrous managers are able to fulfil multiple roles, manage multiple tasks relating to both competence deployment and competence definition activities, and conduct both routine and non-routines activities, within a certain period of time. They are described as being "multi-taskers".
3. Ambidextrous managers are able to both refine their current knowledge, skills, and expertise, and acquire new ones.

While these attributes characterise the behaviours of ambidextrous managers, similar features may be seen in the shop-floor employees who are ambidextrous. Research on contextual individual ambidexterity of shop floor employees alongside the organisational context is likely to give a better understanding of how employees' individual ambidexterity contributes to the overall organisational ambidexterity. A few studies along this line of inquiry focus on the senior members of the organisations under study (c.f. Lin and McDonough, 2011; Mom et al., 2009). According to Raisch et al. (2009), the ability of the individuals employed by an organisation will have an aggregate effect on the organisation's ambidexterity. However, they posit further that, in most cases, an organisation's ambidexterity is more likely to be a function of interrelated individual and organisational factors than the summation of the individual's activities and ambidexterity. It is, therefore, important to investigate the required organisational context for Contextual Individual Ambidexterity of the shop floor employees at the individual level of analysis (RQ2); and the relationship between the Contextual Individual Ambidexterity of the managerial employees and Organisational Ambidexterity (RQ3).

### 2.13.3 Organisational Ambidexterity and Firm Survival

To survive, firms must exploit current competitive advantage and competencies and also explore new domains with equal dexterity (Lubatkin et al., 2006). For firms to remain competitive and adaptive to continuous change in the business environment,

they must exploit existing competencies and explore new ones (Lubatkin et al., 2006; Floyd and Lane, 2000). He and Wong (2004) defined organisational ambidexterity as the capability of an organisation to operate successfully in both mature markets and emerging markets. In mature markets, cost efficiency is critical. However, experimentation, speed, and flexibility are also critical features of the emerging markets (Simsek, 2009; He and Wong, 2004).

The ability of firms to balance between exploration activities and exploitation activities can be linked to their ability to operate successfully in both mature markets and emerging markets. Ambidextrous firms excel at exploiting existing opportunities, in terms of products and services, and also at exploring new opportunities (Andriopoulos and Lewis, 2009). Atuahene-Gima (2005) defined Organisational Ambidexterity as a concurrent investment in both the exploitation of existing product innovation capabilities and the discovery and exploration of new ones. The ability of an organisation to pursue exploration of new product markets while exploiting current product markets is crucial to its long term survival (Venkatraman et al., 2007). The general consensus from the literature is that Organisational Ambidexterity is an organisational trait of a firm that is capable of exploiting existing competencies as well as exploring new opportunities with equal dexterity (Cao et al., 2009).

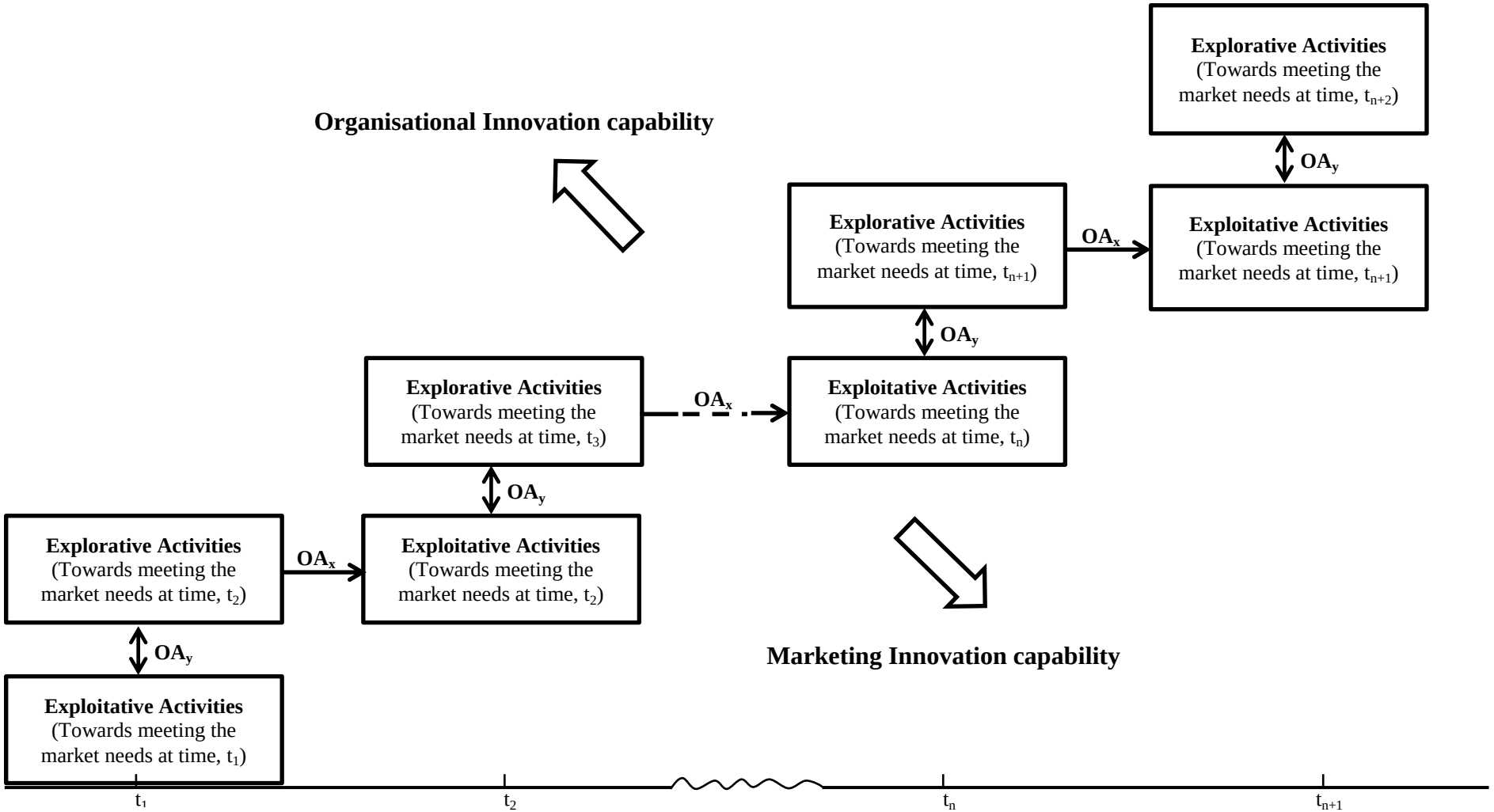
Exploitative activities transform knowledge into commercial ends; without exploitative efforts, knowledge may not be fully utilised (Andriopoulos and Lewis, 2009). On the other hand, explorative activities aim at continuously renewing and expanding an organisation's knowledge base; without explorative efforts, a firm's stock of knowledge will wane (Andriopoulos and Lewis, 2009). When firms focus exclusively in exploration, they tend to suffer by not gaining the business and financial returns from their knowledge (Levinthal and March, 1993). At every point in time, meeting the present needs of the existing customers of any firm requires more of the exploitative than the explorative activities from the firm. However, meeting the future needs of the customers (both the current and the future customers), requires more of the explorative than the exploitative activities.

Gibson and Birkinshaw (2004) argue that ambidexterity promotes sustainable performance. In their work, the terms "alignment" and "adaptability" correspond to exploitation and exploration activities respectively. According to them, alignment

activities are tailored toward improving business performance in the short term, while adaptability activities are geared toward improving business performance in the long term. Focussing on any of these activities at the expense of the other, gives rise to tensions and problems (Gibson and Birkinshaw, 2004). Raisch et al. (2009) suggest that ambidexterity is likely to relate positively to organisation survival, firm resistance to organisational crises and decline, employee satisfaction and motivation, and corporate reputation.

Su et al. (2011) argue that the performance implication of the interaction between exploratory learning and exploitative learning is still doubtful with contradictory perspectives. According to Raisch and Birkinshaw (2008), extant study on contextual ambidexterity is scarce and limited to the study by Gibson and Birkinshaw (2004). In order to broaden the current understanding of contextual ambidexterity, Raisch and Birkinshaw (2008) also emphasise the need to research more into ambidexterity at an individual level of analysis. Mom et al. (2009) further confirm that previous research studies on ambidexterity focuses on firm and business unit level of analysis, while conceptual and empirically validated studies at the individual level of analysis are very scarce. Besides, as noted by Su et al. (2011), the competing perspectives and the inconclusive empirical results on Organisational Ambidexterity reveal the need for more investigation on the issue. According to He and Wong (2004), the returns associated with the exploration activities are more distant in time than the return associated with the exploitative activities. This statement reveals that another important concept of the organisational ambidexterity construct is the timing of the benefits (financial business returns to the organisation) of each of the activities associated with the construct. As shown in Figure 2.7, this research suggests two components of ambidexterity; x and y. The y component (OAy) can be said to focus on the individual ambidexterity, while the x component (OAx) describes the organisational ambidexterity. This is because OAy focuses on the employees' capability to successfully carry out multiple tasks relating to the current exploitative and explorative activities at a point in time. Also, OAy refers to the individual employee's ability to simultaneously carry out both routine and non-routines activities at a point in time. On the other hand, the x component (OAx) focuses on how to transform the present explorative activities of the organisation into its future exploitative activities.

**Figure 2.7: Pictorial View of x and y components of Organisational Ambidexterity and their relationship with OMIs**




**Change in time:** A function of a change in the market needs (in customers' needs and/or in business environment)

Consequently, OAy can be viewed as having an indirect impact on the organisation as a whole, while OAx has a direct impact on the organisation's long-term success, long-term business performance and growth. Figure 2.7 shows that explorative activities relate to the Organisational Innovation capability while exploitative activities relate to the Marketing Innovation capability. Thus, this suggests that the CIA level of the employees will have an effect on: the Organisational Innovation capability; the Marketing Innovation capability; and the Organisational Performance (RQ4).

## 2.14 Summary of the Research Gaps

### 2.14.1 Effective Innovations in SMEs

Innovation activities are said to be effective if they have positive impact on business returns and organisational growth. Small and medium sized companies have a strong tendency to invent because they are very close to the customers, but their main problem is in the commercialisation of their inventions (O'Regan et al., 2006a; Van de Vrande et al., 2009; Gans and Stern, 2003). According to Cosh et al. (2005), limited research has been carried out on the productivity of innovation within the context of SMEs. A recent study by Park and Ghauri (2011) reveals that small and medium sized enterprises in developing economies search for complementary knowledge and learning opportunities, and this never guarantees possession of sufficient capacity to absorb these technological innovations when compared with small firms in developed economies. Limiting factor to the growth of SMEs in developing nations is that little information exists about their operating procedures; their management styles; their success factors; and the theories explaining the success (Lee et al., 2010; Jackson et al., Jackson et al. 2008).

### 2.14.2 Organisational and Marketing Innovations (OMIs)

Organisational innovations are results of management's strategic decisions emerging from the implementation of organisational methods that have never been used before in the firm (OECD/Eurostat, 2005). Marketing innovations involve the implementation of new marketing methods to address the customer needs or opening

up new markets (OECD/Eurostat, 2005). Many of the previous studies on innovation tend to focus more on process and product innovations (Edquist 2009; Conway and Steward, 2009). It is, however, interesting to note that organisational and marketing innovations could be the necessary prerequisites to optimally utilise and deploy such technological process and product innovations (Lam, 2005).

The lack of prior research on non-technological innovations has been attributed to poor data availability (Battisti and Stoneman, 2010; Schubert, 2009). According to Nguyen and Mothe (2008), many empirical studies on firms' innovative capacity, innovation inputs and other support instruments do not take into account the complementary innovation strategies of marketing and/or organisational innovations. The study of Battisti and Stoneman (2010) reveals that adoption of technological innovations by firms is not enough to gain competitive advantage; the far-reaching benefits of technological innovations can only be achievable if they are accompanied by non-technological innovations. While most studies on innovation have focussed only on one innovation type at a time, findings reveal that both organisational and marketing innovations have been under-researched as a joint entity (Battisti and Stoneman, 2010).

### 2.14.3 Contextual Individual Ambidexterity

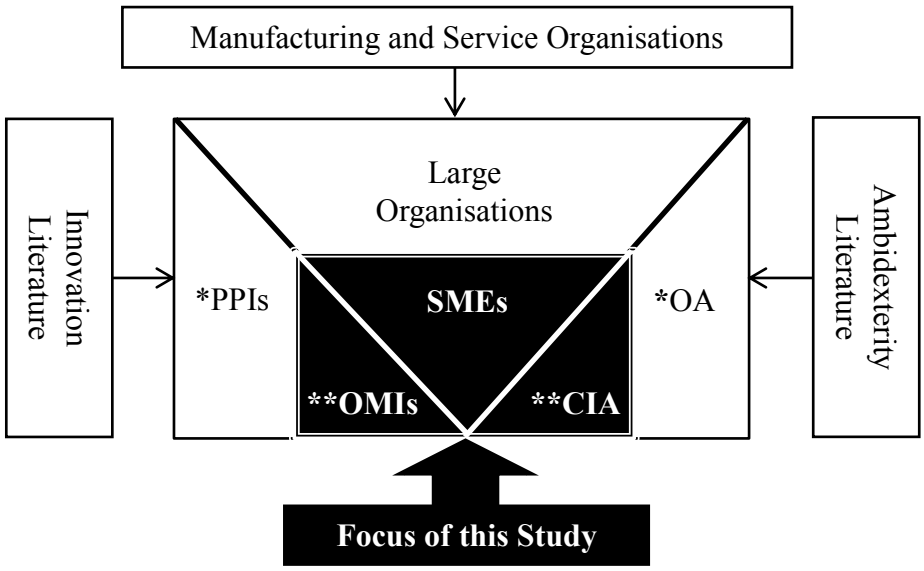
Ambidextrous firms excel at exploiting existing opportunities, and also at exploring new opportunities (Andriopoulos and Lewis, 2009). The ability of an organisation to pursue exploration of new product markets while exploiting current product markets is crucial to its long term survival (Venkatraman et al., 2007). Exploitative activities transform knowledge into commercial ends. This implies that without exploitative efforts, knowledge may not be fully utilised (Andriopoulos and Lewis, 2009). On the other hand, explorative activities renew and expand an organisation's knowledge base; without explorative efforts, a firm's stock of knowledge will decline (Andriopoulos and Lewis, 2009). When firms focus exclusively on exploration, they tend to suffer by not gaining the business and financial returns from their knowledge (Levinthal and March, 1993). Gibson and Birkinshaw (2004) argue that ambidexterity promotes sustainable performance. According to them, alignment activities are tailored toward improving business performance in the short term, while adaptability activities are

geared toward improving business performance in the long term. Raisch et al. (2009) suggest that ambidexterity is likely to relate positively to organisation survival, firm resistance to organisational crises and decline, employee satisfaction and motivation, and corporate reputation.

As shown in Figure 2.6 in section 2.13.2, previous studies on the antecedents of organisational ambidexterity focus on the composition of the firm's leadership and on the organisational context. There has been a call for research into ambidexterity at an individual level of analysis (Raisch and Birkinshaw, 2008), though few studies have reacted thus far. O'Reilly and Tushman (2011), Lin and McDonough (2011) and Mom et al. (2009) focus on firm leadership and top management team composition. Gibson and Birkinshaw (2004) argue that every individual in a unit can concurrently deliver value to existing markets in his or her functional area, and can also react appropriately to the changes in the task environment. Thus, theoretical and empirical investigation on organisational ambidexterity with respect to the composition of the shop floor employees is yet to receive the needed attention. The focus of the previous research on the antecedents of organisational ambidexterity reveals that research on individual ambidexterity is scarce.

As shown in section 2.13.2, research on contextual individual ambidexterity of shop floor employees alongside the organisational context is likely to give a better understanding of how employees' individual ambidexterity contributes to the overall organisational ambidexterity. The research study will investigate the contextual individual ambidexterity of the shop floor employees at the individual level of analysis within the organisational context. Based on the findings from the literature, Figure 2.8 summarises the gaps that have been identified and the focus of this study.

**Figure 2.8: Identified Gaps**




*****Focus of the Previous Studies;

******Receive Limited Attention in the Literature

**CIA:** Contextual Individual Ambidexterity

**PPIs:** Product and Process Innovations;

**OMIs:** Organisational and Marketing Innovations

## 2.15 Relating the Research Questions to the Research Framework

A social research question must be researchable, systematic, specific and clearly defined (Green, 2008). According to Green (2008), the features of any research questions or problems include but not limited to the following: must be interesting; relevant; feasible; ethical; concise and answerable. Based on the identified gaps in the literature, the following research questions have been formulated. Figure 2.9 shows the relationships between the research questions and the reviewed literature. Figure 2.10 shows the research framework for this study.

With reference to the findings from the literature, Contextual Individual Ambidexterity, Organisational and Marketing Innovations (OMIs) can be linked to Organisational Ambidexterity, as shown in Figure 2.10. This suggests that Contextual Individual Ambidexterity may be necessary antecedents to develop the firm's OMIs capabilities.

**Figure 2.9: The relationships between the research questions and the reviewed literature**

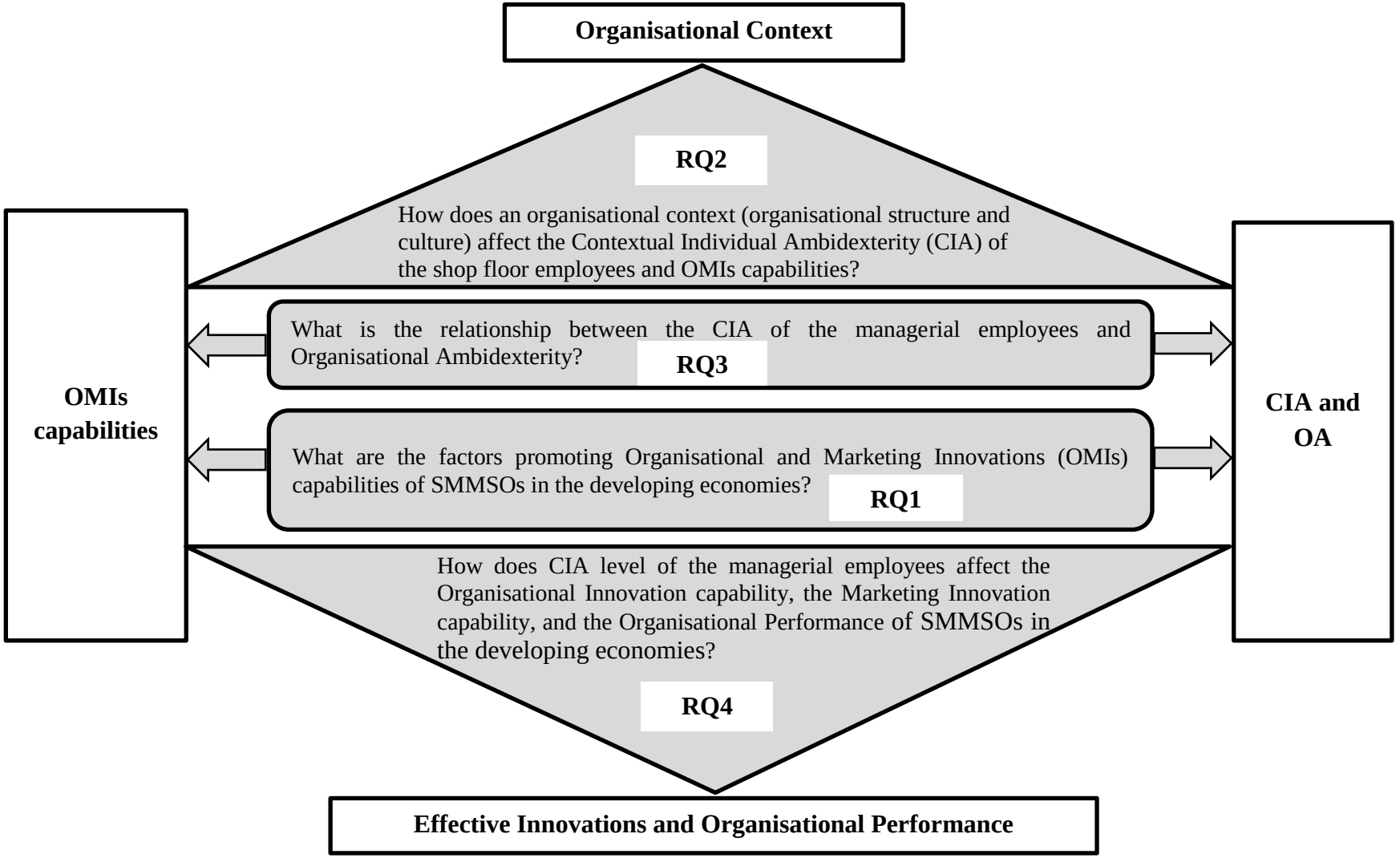
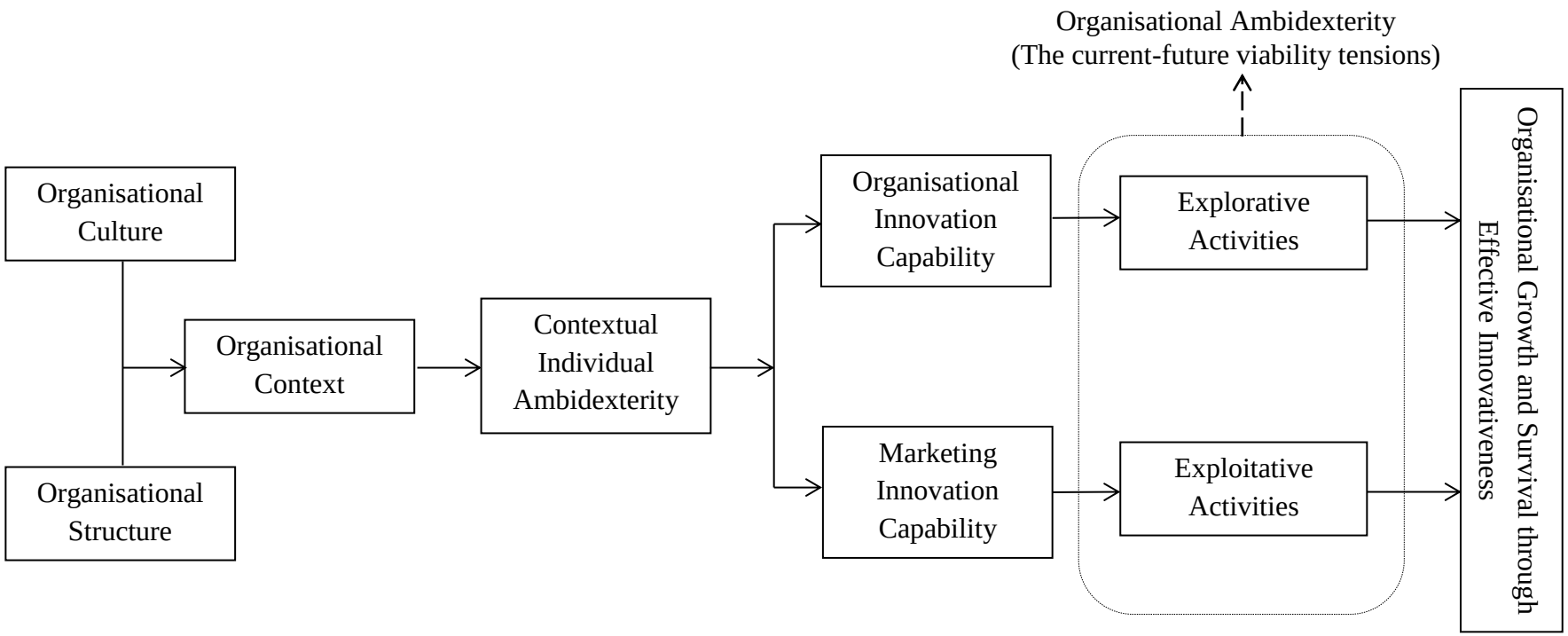


**Figure 2.10: The Research Framework**



## 2.16 Developing the Research Hypotheses

According to Creswell (2009 p. 132), research hypotheses are predictions the researcher makes about the expected relationships among the identified research variables. The numeric estimates, through the use of statistical tools and procedures, of the research population values are based on data collected from the study samples (Creswell, 2009). The statistical tools enable the researcher to draw inferences and conclusions about the population from the study sample.

### 2.16.1 Organisational Context: Organisational Structure and OMIs

Meijaard et al. (2002) and Damanpour and Gopalakrishnan (1998) identified two groups of variables describing organisational structure. The first set measures the complexity of the organisation and its work division, while the second set describes the control mechanisms. Table 2.9 shows the variables used to describe the structure for organisations.

**Table 2.9: Variables Describing the Organisational Structure**

| Variables | Descriptions | Classification |
|---|---|---|
| Specialisation | Measures organisational complexity and represents specialities in an organisation | Organisation complexity |
| Functional differentiation | Measures organisational complexity and represents the extent to which an organisation is divided into different units | Organisation complexity |
| Professionalism | Measures organisational complexity in the area of professional knowledge of the members of the organisation in education and experience | Organisation complexity |
| Formalisation | Reflects the emphasis on following rules and procedures in carrying out firm's activities | Control mechanism |
| Standardisation | Shows procedures for tasks execution. | Control mechanism |
| Centralisation | Shows the extent to which decision-making autonomy is dispersed in the firm | Control mechanism |
| Vertical differentiation | Represents the number of levels in the firm's hierarchical structure | Control mechanism |

Adapted from Meijaard et al. (2002); Damanpour and Gopalakrishnan (1998)

According to Burns and Stalker (1961; cited in Lam, 2011), firms can be grouped into mechanistic and organic organisations, as shown in Table 2.10.

**Table 2.10: Mechanistic and Organic Organisations**

| | Mechanistic Organisations | Organic Organisations |
|---|---|---|
| **Hierarchy of Authority** | Organisations are characterised by a centralised decision making process. | Organisations are characterised by a decentralised decision making process; the authorities to control task are delegated. |
| **Rules and Procedures** | There is a strict adherence to formally prescribed rules and procedures. There are many rules. | There is no emphasis on formal rules and procedures. There are few rules. |
| **Information flow** | There is a tight control of information flow. | Open communication is evident. |
| **Ease of change** | Organisations tend to be rigid. | Organisations are adaptive and flexible. There is fluidity in the organisational structure. |
| **Communication** | There are carefully constructed reporting and workflow relationships with much written communication. | Much verbal communication is evident. |
| **Division of labour** | The division of labour is precise. | The division of labour is open and subject to change. |
| **Environment** | Suitable for stable and predictable environment. | Suitable for changing environmental conditions which require emergent and innovative responses. |
| **Employee Obligations** | There is a precise definition of rights, obligations and technical methods. | Commitment to the organisation goes beyond any technical definition. |
| **Employees Interactions** | Interactions among members tend to be vertical (more of interactions between the superior and the subordinate). | Interactions among members tend to be lateral. |
| **Knowledge location** | Knowledge of the whole organisation is located exclusively at the top of the hierarchy. | Knowledge may be located anywhere in the network and its location temporarily becomes the centre of authority and communication. |

Adapted from Burns and Stalker (1961), Lam (2011) and Su et al. (2011)

According to OECD/Eurostat (2005 p.31), "a firm's organisational structure can affect the efficiency of innovation activities, with some structures better suited to particular environments". A firm's structure plays critical roles in employee empowerment, which in turn facilitates employees' creativity, knowledge sharing among the employees and firm innovativeness (Bessant and Tidd, 2007). According to Lam (2011), "the polar typologies of mechanistic and organic organisations demonstrate how the differences in technological and market environment affect organisational structure and innovation management". This implies organisational structure relates to how a firm's innovation activities are managed, and also to the firm's business environment. Mechanistic organisations tend to be more rigid and hierarchical and suited to a stable and predictable environment, while organic organisations show a more fluid set of arrangements which are suitable to conditions of rapid change and innovation (Lam, 2011).

This research will focus on the extent to which the SME's structure is formal at one end, and informal at the other end. This classification is consistent with organic-mechanistic distinction. In line with some previous studies, such as Su et al. (2011), Lee and Yang (2011), Menguc and Auh (2010), Raisch (2008), Slevin and Covin (1997), Burns and Stalker (1961), organisational structure will be viewed along the organisational organic-mechanistic dimension. The differences between these two extremes are summarised in Table 2.10.

It is important to note that past theories on the relationships between organisational structure and innovation show inconsistent results (Damanpour and Gopalakrishnan, 1998). The structural theories of innovation have been used to explain the reasons for the inconsistent results in the previous research. The theories include the dual-core theory of innovation, the theory of innovation radicalness, and the ambidextrous theory of innovation (Damanpour and Gopalakrishnan, 1998; Menguc and Auh, 2010). These theories have significant implications on the innovation research.

#### 2.16.1.1 The ambidextrous theory of innovation (Structural theory 1)

The ambidextrous theory distinguishes the pre-adoption activities that lead to a decision to adopt innovation from the activities during implementation and continuous use of innovative processes or products (Damanpour and Gopalakrishnan, 1998). According to this theory it may be argued that informal structure facilitates the

initiation of innovations, while formal structure facilitates its implementation (Damanpour and Gopalakrishnan, 1998).

#### 2.16.1.2 The theory of radicalness (Structural theory 2)

The theory of radicalness views innovation from two different perspectives; it divides innovation into two separate terms of incremental and radical innovations (Damanpour and Gopalakrishnan, 1998). For a sample of high-tech firms investigated by Menguc and Auh (2010), they concluded as follows:

- Under a formal structure, the effect of radical product innovation capability is negatively related to new product performance,
- Under an informal structure, the effect of radical product innovation capability is positively related to new product performance,
- Under a formal structure, the effect of incremental product innovation capability is positively related to new product performance, and
- Under an informal structure, the effect of incremental product innovation capability is negatively related to new product performance.

This implies that informal structure favours radical changes, while formal structure favours incremental changes.

#### 2.16.1.3 The dual-core theory of innovation (Structural theory 3)

According to Daft (1978) and Daft (1982; cited in Damanpour and Gopalakrishnan, 1998), the dual-core theory of innovation highlights the differences between administrative and technical innovations as follows:

- While technical innovations follow a bottom-up process, administrative innovations are top-down processes,
- Technical innovations address the technical systems, while administrative innovations focus on the social systems of the organisation,
- Technical innovations focus on the conversion of raw materials into products and services, while administrative innovations focus on the organisational structure, control systems and coordination mechanisms.

- Technical innovations are facilitated by an organic structure, while a mechanistic structure favours innovative changes in the administration.

Based on the dual-core theory of innovation, a mechanistic structure will favour Organisational and Marketing Innovations capabilities. However, according to Walters and Buchanan (2001) and Pashtenko et al. (2000), the current highly competitive business environment requires flexible organisational forms that support both exploration and exploitation of new opportunities. An organic structure has been found from the previous studies (c.f. Camison and Villar-Lopez, 2012; Hatum and Pettigrew, 2006; Pettigrew et al., 2000; Volberda, 1996) to be suitable for innovating in hypercompetitive business environments. From Burns and Stalker's analysis of Organic and Mechanistic Organisations, an organic structure tends to be suitable for changing environmental conditions because of the need for emergent and innovative responses. It is important to note that an organic structure will increase flexibility, generation and exploration of knowledge, creativity, experimentation, and facilitate diverse perceptions to problems and possible solutions (Burns and Stalker, 1961; Teece, 2000; Mintzberg, 1979). This study will therefore assume a positive relationship between adoption of an organic structure and Organisational and Marketing Innovations capabilities. Thus, this gives rise to the research hypotheses 1 and 2.

***H1.*** *An Organic Structure will promote the development of an Organisational Innovation capability.*

***H2.*** *An Organic Structure will promote the development of a Marketing Innovation capability.*

### 2.16.2 Organisational Context: Organisational Structure and OA

According to Raisch (2008), profitable organisational growth requires a design that pursues seemingly contradictory demands through the mechanistic and the organic structures. While mechanistic structures ensure the efficient exploitation of existing competences, organic structures promote the exploration of new competences (Raisch, Raisch 2008). Also, some scholars have argued that the simultaneous pursuit of explorative activities and exploitative activities is possible and should be encouraged for long term organisational survival (c.f. Lubatkin et al., 2006; Cao et al., 2009; He

and Wong, 2004). However, Gupta et al. (2006) posit that the organisational procedures required by exploration are fundamentally different from those needed by exploitative activities. Based on the positions of March (2006) and Voss et al. (2008) that explorative activities and exploitative activities compete for the organisation's limited resources, Su et al. (2011) speculate that the interaction effect between explorative activities and exploitative activities may turn out to be negative. For example, findings from Atuahene-Gima (2005) reveal that the interaction between competence exploration and competence exploitation negatively relates to radical innovation performance, and has no significant impact on incremental innovation performance.

In the study of Organisational Ambidexterity, the roles of organisational routines have not been critically examined, and this then leaves a significant research gap (Su et al., 2011). Su et al. (2011) is the first quantitative study to examine how organisational structure affects the performance linkage of the interaction between the organisation's exploratory activities and exploitative activities. A similar study by Raisch (2008) qualitatively examines the specific conditions that guide the choice and the deployment of different structural solutions and strategies. Findings by Su et al. (2011) reveal that exploratory learning and exploitative learning are complementarities when the organisational structure is organic, and substitutes when the organisational structure is mechanistic. Studying Organisational Ambidexterity without considering the influence of organisational routines may be responsible for the conflicting views on the research outcomes of what few studies there are on Organisational Ambidexterity. This further reveals the need to study Contextual Individual and Organisational Ambidexterity alongside the organisational context.

Findings from Slevin and Covin (1997) reveal that organisational structure has a significant impact on the performance of an organisation's strategy formation patterns. In addition to knowledge-sharing culture, organisational structure seems crucial to the complementarity of a firm's explorative and exploitative activities. Organisational structure includes the design of roles and administrative mechanisms put in place by the organisation to control, monitor and integrate work activities and the flow of organisational resources (Olson et al., 1995).

An organic structure leads to more participative decision making processes and more mutual conflict resolution processes than a mechanistic structure, thus increasing employee autonomy, lowering centralisation of authority, and reducing rules and regulations (Olson et al., 1995). Some scholars, such as Benner and Tushman (2003) and Tushman and O'Reilly (1996), posit that a decentralised organisational structure with loose processes encourages explorative activities in organisations, while an organisational structure with centralised tight processes encourages exploitative activities. Gilbert (2005) is of the opinion that a loosely coupled organisational structure will help organisations to show different competencies capable of addressing conflicting demands. An organic structure promotes the easy redistribution of organisations' resources when a change in business environment demands it (Slevin and Covin, 1997). Su et al. (2011) posit that explorative learning and exploitative learning are complementarities under an organic structure for the following reasons:

- There is less competition for organisational resources between explorative-related activities and exploitative-related activities in organic organisations than in mechanistic organisations.
- The adaptive nature and flexible features of organic organisations will enable them to concurrently meet the requirement of both explorative-related activities and exploitative-related activities.
- Open communication with little or no emphasis on formal rules and procedures in organic organisations enables them to integrate explorative-related activities and exploitative-related activities for optimal synergetic effect.

In mechanistic organisations, the simultaneous pursuit of both explorative-related and exploitative-related activities is not feasible because there is a rigid flow of resources, and the rigid rules and regulations may not be suitable for the two contradictory activities (Su et al., 2011; Yalcinkaya et al., 2007; Atuahen-Gima, 2005; Slevin and Covin, 1997). Su et al. (2011) argue further that mechanistic organisations may not effectively integrate their explorative and exploitative activities together. According to Teece (2000), a low level of centralisation facilitates knowledge generation and exploration. This implies that an Organic Structure will positively correlate to

Contextual Individual and Organisational Ambidexterity; the hypotheses for which can be articulated as:

***H3.*** *An Organic Structure will positively relate to Contextual Individual Ambidexterity of the shop floor employees.*

***H4.*** *An Organic Structure will positively relate to Contextual Individual Ambidexterity of the managerial staff.*

***H5.*** *An Organic Structure will positively relate to the Organisational Ambidexterity.*

According to Gibson and Birkinshaw (2004), every employee in a company has the ability to concurrently deliver value to the existing markets and to also react appropriately to the changes in the environment. Raisch et al. (2009) posit further that, in most cases, an organisation's ambidexterity is more likely to be a function of interrelated individual and organisational factors than the summation of the individual's activities and ambidexterity. Based on the position of Raisch et al. (2009), the ability of the individuals employed by an organisation will have an aggregate effect on the organisation's ambidexterity. This implies that Contextual Individual Ambidexterity of the employees will positively correlate to Organisational Ambidexterity, therefore leading to the following hypothesis.

***H6.*** *Contextual Individual Ambidexterity of the managerial staff will positively relate to Organisational Ambidexterity.*

While organisation's explorative activities focus on continuous renewal and expansion of its knowledge base, its exploitative activities convert this accumulated knowledge into commercial gains (Andriopoulos and Lewis, 2009). According to Gibson and Birkinshaw (2004), concurrent pursuit of both exploration and exploitation activities is a primary requirement for organisational survival and prosperity. In order to survive, remain competitive and adaptive to changes in the business environment, organisations must simultaneously exploit existing competitive advantage and explore new ones with equal dexterity (Lubatkin et al., 2006; Floyd and Lane, 2000). This implies that Organisational Ambidexterity will promote long term organisational survival and performance, as articulated in the following hypotheses.

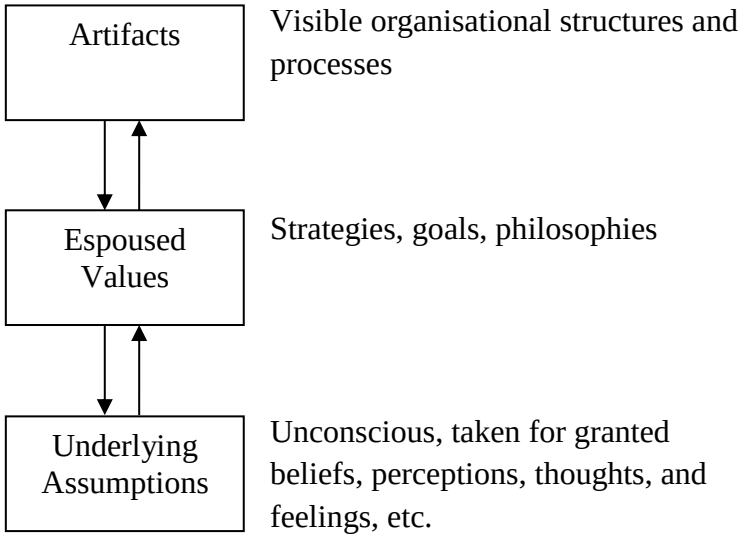
***H7.*** *Contextual Individual Ambidexterity of the managerial staff will positively relate to organisational performance.*

***H8.*** *Organisational Ambidexterity will positively relate to organisational performance.*

### 2.16.3 Organisational Context: Organisational Culture

According to Cameron and Quinn (2006), an organisational culture is a reflection of values, dominant leadership styles, the language, the procedures and routines of the organisation. It encompasses the assumptions, deeply seated values, attitudes, behaviours, expectations and beliefs shared by personnel in an organisation (Martins and Terblanche, 2003; Cameron and Quinn, 2006; Davies et al., 2007; El-Homsi and Slutsky, 2010). The gap between what is formally announced and what actually takes place is a function of organisational culture (Martins and Terblanche, 2003). Schein (2009) identified three levels of organisational culture, ranging from the visible organisational artifacts to the tacit underlying assumptions, as shown in Figure 2.11.

**Figure 2.11: The Three Levels of Culture**



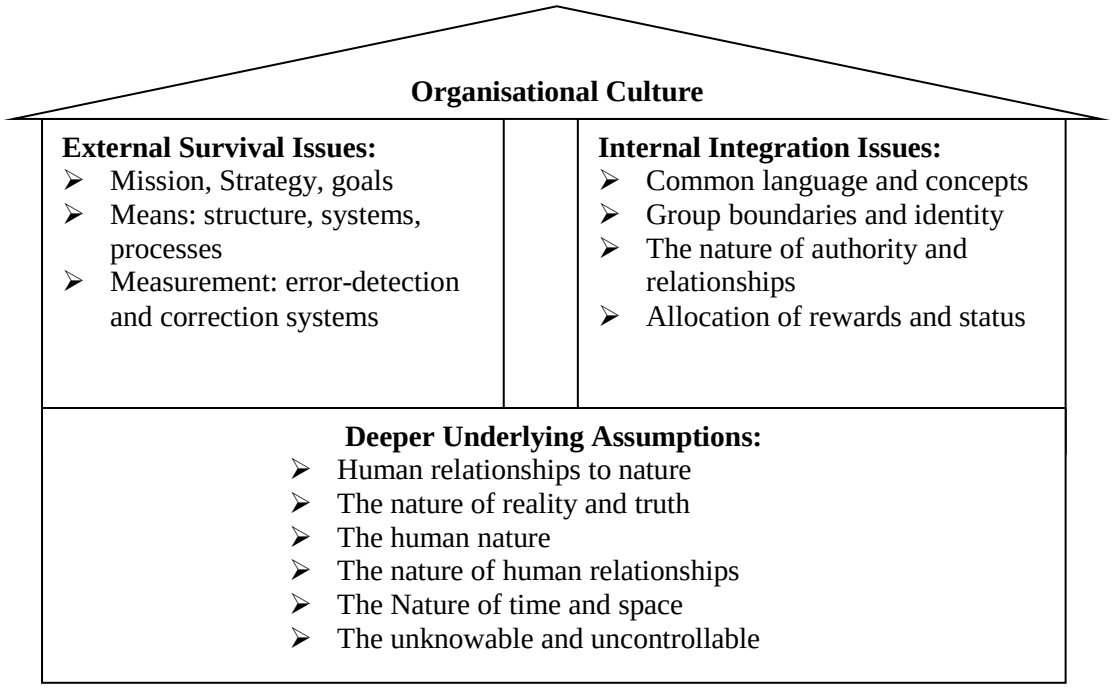

(Source: Schein, 2009 p.21)

Organisational culture can be developed from various sources; it can emanate from the founder and/or from day to day solutions to past problems and challenges, and through improvement strategies systematically developed by management teams (Cameron and Quinn, 2006). Organisational culture can be developed through the

working together of individuals with a common goal and objective (El-Homsi and Slutsky, 2010). This implies that each employee of every organisation contributes to its culture. According to Martins and Terblanche (2003), organisational culture often comes with basic assumptions, some of the features of these assumptions include: (1) they are valid within the organisation; (2) form an integral part of the organisation's general functions; (3) they are maintained through a continuous process of human interaction; and (4) the assumptions have been proven to work well in the past for the organisation.

Schein (2009) proposed three major contents for organisational culture, namely: the assumptions that relate to the external survival issues; those that relate to the internal integration issues; and finally, the deeper underlying assumptions, as shown in Figure 2.12. This summarises the three crucial pillars of organisational culture, based on its description by Schein (2009).

**Figure 2.12: Schein's View of Organisational Culture**




(Adapted from: Schein, 2009)

Various improvement strategies such as TQM, downsizing and reengineering initiatives have proven not to be enough to enhance organisational performance in the last two decades; in fact, cultural values have proven to supersede corporate strategy, market presence, and technological advantages, which are equally important

(Cameron and Quinn, 2006). For instance, the top five most successful US firms in the last 20 years confirmed their major distinguishing factor to be their organisational culture (Cameron and Quinn, 2006).

Referring to the words of Cameron and Quinn (2006), many improvement initiatives have failed to achieve the desired results because the organisational culture remained the same. Organisational culture can therefore be referred to as a foundational block upon which every improvement strategy is built in order to achieve the desired results. Rapid and continuous change in the external environment makes organisational change a necessity. According to Chu (2003) and Cameron and Quinn (2006), organisational culture and employee empowerment are important elements to change management; a mere change of procedures and strategies cannot successfully change an organisation that has its culture remained unchanged.

It is important to note that effective performance and long-term effectiveness of organisations cannot be achieved without an organisational culture (Cameron and Quinn, 2006). Corporate culture has proven to reduce collective uncertainties, create social order, create continuity, create a collective identity and commitment, and give direction for the future; and simply put, it is a critical factor that ensures long-term financial achievement (Cameron and Quinn, 2006). Among other things, organisational culture performs the following functions: creates competitive edge; creates the boundaries for the organisation; guides the personnel attitudes and behaviour; a medium to socialise and integrate new members; provides room for acceptable behaviour and social system stability; creates a unique identify which facilitates personnel commitment to the organisation; and complements rational managerial tools such as strategic direction, technology, structure (Martins and Terblanche, 2003).

According to Martins and Terblanche (2003), the culture of any firm dictates its creativity and innovation level, and sometimes, the current organisational culture of a firm may not support its demands for creativity and innovation. The nature of interaction between people, roles, technology and the external environment shows that creativity and innovation can be influenced by several variables (Martins and Terblanche, 2003). Martins and Terblanche (2003) concluded that creativity and innovation seemed to flourish only under the right circumstances in an organisation,

and that a firm's culture could either support or hinder creativity and innovation. They stated the need for empirical research in supporting these opinions.

With respect to SMEs, organisational culture is one of the main drivers needed to fast track effective innovation in manufacturing SMEs as argued by O'Regan et al. (2006b). O'Regan et al. (2006b) found that a firm's innovation is related to its empowerment culture, staff creativity and leadership strategy. Often times, small firms are encouraged to collaborate with large firms to facilitate open innovation due to limited their resources (Vrande et al., 2009). However, van de Vrande et al. (2009) found that the main barrier in small firms, with respect to open innovation, relates to the cultural issues arising during the interaction and collaboration with external partners. This reveals the crucial roles of organisational culture in the development of firm's innovation capabilities.

### 2.16.4 Organisational Context: Organisational Culture and OMIs

Cameron and Quinn (2006) identified four major organisational culture types described in the following sections.

#### *2.16.4.1 The Hierarchy Culture*

In this culture type, formal rules, procedures and policies govern what the people do and the long term organisational goals are stability, predictability, reliability, and efficiency. This implies that internal control mechanisms include rules, specialised jobs, and centralised decisions.

#### *2.16.4.2 The Market Culture*

For market culture, the organisation functions as a market through external orientations that focus on transactions with the suppliers, customers, contractors, unions, and other external constituencies. The core values are competitiveness and productivity. External positioning and controls are often stressed, and the focus is on productivity, results and profits. While the culture is characterised with tough and demanding leaders, its success is measured by market share and penetration.

#### *2.16.4.3 The Clan Culture*

This is similar to a family-type organisation. The focus is teamwork and employee involvement and empowerment with evidence of corporate commitment to employees.

Features include minimal management levels, self-management, employee ownership, team working, participation and job rotation. It is characterised by a friendly working environment.

#### *2.16.4.4 The Adhocracy Culture*

Adhocracy culture is the most responsive culture to change because it is characterised by rapid reconfiguration to suit new circumstances. The culture encourages adaptability, flexibility and creativity in uncertainty situations. This culture takes advantage of new opportunities as fast as possible, and this often leads to production of new innovative products and services. The culture is characterised by the absence of an organisational chart, temporary physical space, temporary roles, creativity and innovation. According to Cameron and Quinn (2006), an adhocracy culture reflects values, styles, language, procedures and routines that support creativity and innovation. Table 2.11 summarises the key features of each of the organisational culture types.

**Table 2.11: Organisational Culture Types and Key Features**

| Types | Key Features |
|---|---|
| Hierarchy | Rules and Procedures: Organisation focuses on internal maintenance with a need for stability and control. |
| Market | Competitive market shares: Organisation focuses on external positioning with a need for stability and control. |
| Clan | Team work, participation and consensus: Organisation focuses on internal maintenance with flexibility, concern for people, and sensitivity to customers. There is more employee empowerment, more participation and involvement, more cross functional teamwork, more recognition for employees and more horizontal communication. |
| Adhocracy | Dynamic, entrepreneurial, and creative workplace always with experimentation and innovation: Organisation focuses on external positioning with a high degree of flexibility and individuality. There are more employee suggestions, more innovativeness, more thoughtful risk taking and more listening to customers. |

(Adapted from Cameron and Quinn, 2006)

Based on the descriptions of each of the culture types, Adhocracy and Clan cultures will promote CIA of the shop floor employees, Organisational and Marketing Innovations capabilities. Thus, this leads to the following hypotheses.

***H9.*** *Adhocracy and Clan cultures will promote the development of Contextual Individual Ambidexterity of the shop floor employees.*

***H10.*** *Adhocracy and Clan cultures will promote the development of an Organisational Innovation capability.*

***H11.*** *Adhocracy and Clan cultures will promote the development of a Marketing Innovation capability.*

### 2.16.5 Organisational Context: Organisational Culture, OMIs and OA

Lin and McDonough (2011) empirically examine the role of leadership in creating a knowledge-sharing culture as a means to promote organisational ambidexterity. According to Lin and McDonough (2011), to concurrently achieve explorative and exploitative activities within a single business unit, an organisation needs to create a culture that encourages learning and knowledge sharing. This type of culture empowers the members of the organisation to both exploit existing competencies and explore new capabilities (Lin and McDonough, 2011). According to Menzel et al. (2008), organisational culture depends on the organisation's history; it is a holistic, soft, and socially created set of ideas, values, attitudes, and behaviours shared by the members of the organisation.

Organisational culture has a major impact on organisational success as it affects the process of innovation in organisations (Schein, 2009; Chandler et al. 2000). Besides affecting how germane decisions are made in organisations, organisational culture affects the organisation's current and future strategies and changes (Jung et al., 2008; Lee and Yu, 2004; Ireland and Hitt, 1999). Organisational context is the foundation for innovations; while the organisation provides the context, the individuals employed by the organisation develop and carry out the innovations (Lin and McDonough, 2011). A culture that promotes knowledge sharing among the employees is likely to enhance the exploitation of existing competences and the exploration of new capabilities (O'Reilly et al., 1991). Openness, mutual respect and trust encourage ideas-sharing among the employees (Cheng et al. 2008; O'Reilly et al., 1991). This implies that a knowledge-sharing culture thrives among the employees who show mutual respect, openness and trust to one another. Cheng et al. (2008) theoretically and empirically examine the relationships among trust, knowledge sharing and firm performance. In the results of the data analysis from 208 Chinese firms, they find that trust positively relates to knowledge sharing, while knowledge sharing positively relates to firm performance.

When knowledge sharing is encouraged, individuals or groups tends to take innovation initiatives, different levels of creativity are evident among the employees and this, in turn, encourages exploitative and explorative activities among the individuals or groups (Lin and McDonough, 2011; Menzel et al., 2008; Ahmed, 1998; Amabile et al., 1996; Damanpour, 1991). Strategic organisational leaders can facilitate a flow of knowledge from outside their organisation and encourage knowledge exchange within their organisation (Lin and McDonough, 2011). The empirical research by Lin and McDonough (2011) reveals that a knowledge-sharing culture created by the strategic leadership can help organisations to improve their innovation ambidexterity; little is known about the contribution of organisational culture to the contextual ambidexterity of the shop floor employees. By following the outcome of Lin and McDonough (2011), this research proposes that that a Knowledge Sharing will positively correlate to Contextual Individual Ambidexterity of the shop floor employees; encourage group explorative activities (Organisational Innovation Capability); and group exploitative activities (Marketing Innovation Capability), as articulated below:

***H12.*** *A Knowledge Sharing Culture will positively relate to Contextual Individual Ambidexterity of the shop floor employees.*

***H13.*** *A Knowledge Sharing Culture will positively relate to Organisational Innovation capability.*

***H14.*** *A Knowledge Sharing Culture will positively relate to Marketing Innovation capability.*

### 2.16.6 CIA of the Managerial Employees and OMIs Capabilities

Previous studies on ambidexterity have neither suggested nor established any relationships between employee ambidexterity and non-technological innovations. One of the existing research studies however suggests that the ability of the individuals employed by an organisation will have an aggregate effect on the organisation's ambidexterity (Raisch et al., 2009). This aggregate effect can be extended to OMIs capabilities of the organisations. This implies that:

***H15.*** *Contextual Individual Ambidexterity of the managerial staff will positively relate to Organisational Innovation capability.*

***H16.*** *Contextual Individual Ambidexterity of the managerial staff will positively relate to Marketing Innovation capability.*

The current research has generated large number of hypotheses which will be addressed in the later chapters.

## 2.17 Chapter Summary

There is a lack of understanding of how individual ambidexterity at the lower-levels of the organisation and the shop-floor employees affects the overall ambidexterity of the organisations. Also, many of the previous research studies on innovation tend to focus on process and product innovations. It is, however, interesting to note that Organisational and Marketing Innovations could be the necessary prerequisites to optimally utilise and deploy such technological process and product innovations. This chapter identifies gaps in current research concerning Organisational Ambidexterity and proposes a framework to promote effective innovations in Small and Medium-sized Enterprises through shop floor employees' contributions to organisational ambidexterity, organisational innovation capability and the firm's marketing innovation capability. The chapter also provides a comprehensive review of non-technological innovations and proposes possible relationships among the identified constructs. The succeeding chapter will focus on identifying the research strategies and methods to be adopted in addressing the research hypotheses and questions.

# Chapter 3

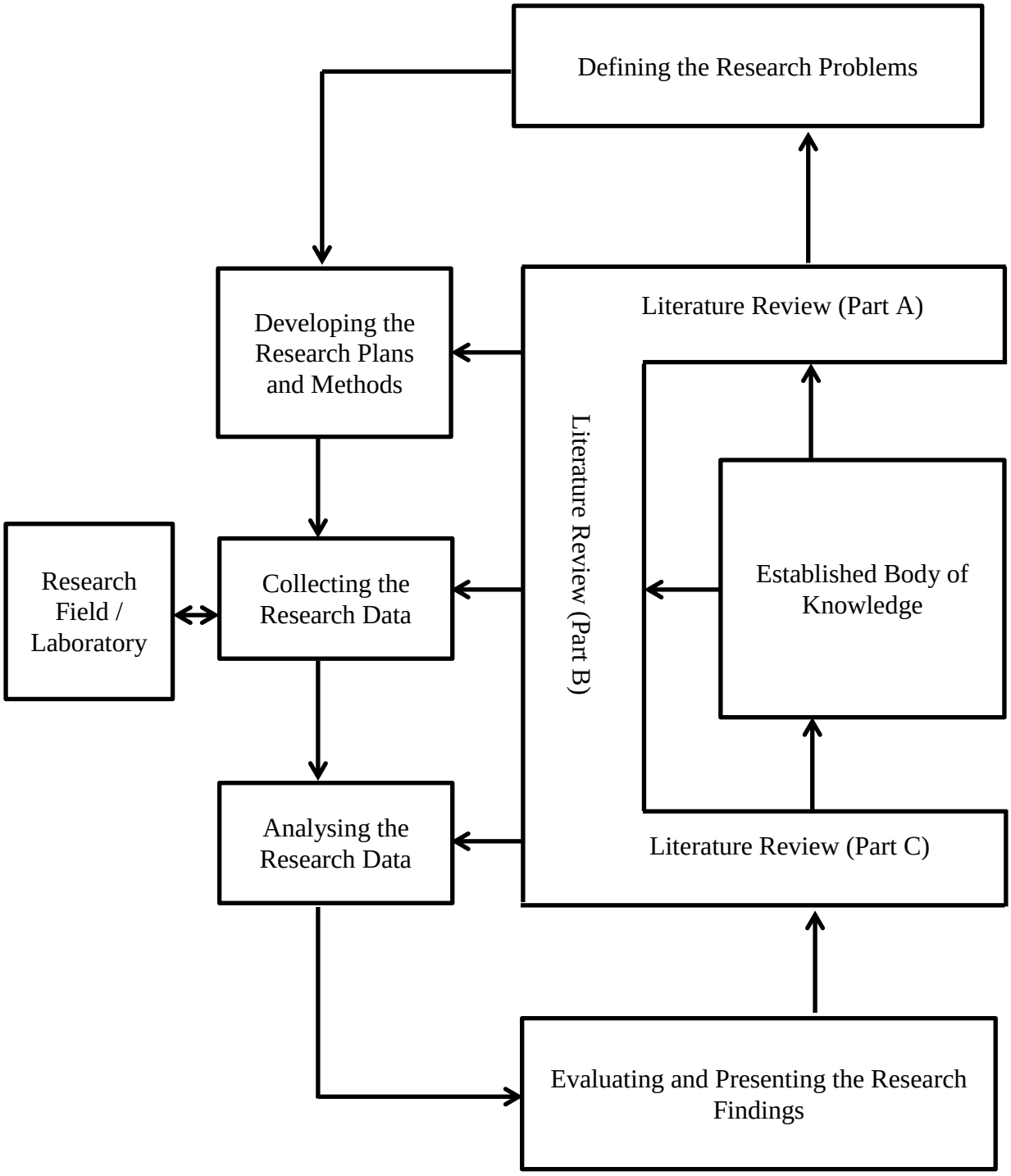
## 3 Research Methodology

The previous chapter presented the research questions and justified the research hypotheses which would be tested against the data collected for this study. This chapter focused on the design of the research methodology; outlined the criteria for selecting the research methods; and described how the selected research designs was implemented to answer the research questions and meet other research objectives.

In addition to the literature search, every effective research study has five main steps (Creswell, 2011; Creswell, 2008; Kotler, 1988), these are: identification of the research problems or objectives; development of the research plan and methods; collection of the research data; analysis of the research data; and presentation and evaluation of the research findings. This implies that, the literature search often occurs concurrently with each of the five steps mentioned above in carrying out a research study; each of the steps is crucial to the success of the research study and findings.

Figure 3.1 has been developed to show how the steps interact with the established body of knowledge via the literature search, at different phases of the research study. The Literature Review defined as Part A in Figure 3.1 aims to identify the research gap. During this review, the researchers establish the research field, summarise the previous related research studies and their significance to the present study. They also identify the research gap in the existing related research literature, and state the research problems. The Literature Review defined as Part B helps to identify the best method to solve the research problems. The review at this stage helps to identify the most appropriate research paradigm(s), the type(s) of data, and the research methods that best answer the research problems. The review also helps the researchers on how to go about the data analysis, and identify what instrument is needed to convert the raw data into a more useful form, that is, information.

**Figure 3.1 Steps in Research Process and their Interactions with the Established Body of Knowledge**




The final part of the literature review (Part C) "transfers" the research findings into the gap identified in the established body of knowledge. This section of the review helps the researchers to explain: the significance of their research findings to the previous related studies; how the findings fit in to the identified gap; and to provide a clear direction for the future work.

Choosing an appropriate research methodology is vital to the success of the research. The nature of the research often dictates the type of research methods, the data types and their analyses. This chapter focused, mainly, on the development of the research methods, and taking into account the underlying assumptions and the building blocks of the research methods, as revealed in the literature.

## 3.1 Philosophical Assumptions and World Views

According to Neuman (2007), a research paradigm defines the set of assumptions and models for data collection and analysis. A research paradigm provides the necessary foundation for undertaking good research. Neuman (2007) identified three fundamental paradigms used in social research: positivist; interpretive; and critical theory worldviews. Alternative paradigms found in the literature include participatory and pragmatist worldviews (Creswell and Plano-Clark, 2011). Each of these specifies its boundaries for new knowledge acquisition (Neuman, 2007). Five common philosophical elements of paradigms or worldviews identified in the literature include: epistemology; axiology; methodology; and rhetoric, each defined in Table 3.1.

**Table 3.1: Common Philosophical Elements of Paradigms**

| | Philosophical Elements | Descriptions |
|---|---|---|
| **1** | Ontology | An area of philosophy that deals with the nature of reality. It defines what exists and the fundamental categories of reality. |
| **2** | Epistemology | An area of philosophy that focuses on the relationship between the researcher and its study. More importantly, it focuses on how human beings create knowledge and how to identify the most logical ways or steps to reach the truth. |
| **3** | Axiology | Focuses on the study of values and their roles in the research studies. |
| **4** | Methodology | Focuses on the process of doing the research studies. |
| **5** | Rhetoric | Focuses on the study of the language of research. |

Adapted from Neuman (2011) and Creswell and Plano-Clark (2011)

The importance of social theory to research study cannot be over-emphasised. Only a naive researcher would think that theory is not relevant to research study; according to Neuman (2007), a good understanding of social theory gives rise to the following:

1. Researchers are able to generate a clear account of their study's purpose(s).
2. Theory enables collection of useful data and suggests ways to analyse them, and make good sense of the information emanating from the data.
3. Theory enables a researcher to connect a single study to the immense base of knowledge and give room for the contributions of other researchers.
4. It increases the level awareness of the interconnections and the significance of the research data.
5. Theory enables the researcher to prevent or reduce time wastage during the research stages.
6. Theory prevents vague thinking, incoherent logic, and ill-defined concepts in the research processes and studies.

Theory and research can be said to be inseparable entities, as evident from the above.

### 3.1.1 Positivist Worldview

The positivist approach assumes that social findings consist of objective facts that can be precisely measured quantitatively, and that causal theories can be tested through the use of statistics (Neuman, 2007). Emphasis is placed on replication and on the ultimate test of knowledge, and the principles of natural sciences are applied directly to the study of social science (Neuman, 2007). Positivism is nomothetic, and adopts scientific method to generate knowledge inductively and/or deductively within the principles and assumptions of science (Dash 2005; Neuman, 2007). Positivist thinkers generate knowledge with the help of quantification and generally see experiments as ideal ways to carry out research studies; thus, suggesting a quantitative rather than a qualitative approach to social inquiry (Dash 2005; Neuman, 2007).

Critics of the positivist paradigm, however, emphasise the subjective states of individuals in the process of scientific inquiry. They argue that the approach treats human behaviour as passive, easily controlled and manipulated by the external environment, and lacks regard for the subjective states of the individuals being studied (Dash, 2005).

### 3.1.2 Interpretive Worldview

An interpretive worldview is a constructivist view of social reality, and calls for the creation of a special form of science that can capture, or be based on the uniqueness of human social life (Neuman, 2007). This is because the interpretive approach assumes that people socially interrelate and react according to what they believe to be real rather than what is objectively real, and that social reality is subject to change (Neuman, 2007). Due to the belief that qualitative data can accurately capture the fluidity of social reality, the interpretive approach favours the use of qualitative data. According to Dash (2005), interpretivism is marked by three different schools of thought; phenomenology, ethnomethodology and symbolic interactionism, all of which emphasise human interactions with daily life phenomena. The description and significance of each of the schools of thought are summarised in the following section.

#### 3.1.2.1 Phenomenology

The theoretical view point believes that individual behaviour is a function of the experience gained by direct interaction with the phenomena. This reveals the need for the researcher to have an understanding of the process of interpretation by individuals. This will enable the researcher to comprehend motives and thoughts behind the behaviours of others.

#### 3.1.2.2 Ethnomethodology

The theoretical view focuses on the process by which common sense reality is built in day-to-day interactions, and the interpretation people use in making sense of the social settings.

#### 3.1.2.3 Symbolic interactionism

This view focuses on the understanding and interpretation of interactions that take place between human beings. The proponents claim that human interaction and its outcomes, patterns of social organisations, can be well understood by focussing on the capacity of individuals to create symbolically meaningful objects in the world.

Interpretive researchers tend to favour and adopt an idiographic form of explanation and inductive reasoning, and do not see replication as the fundamental test of knowledge, but they rather emphasise empathetic understanding of the phenomenon under investigation (Neuman, 2007). They are of the opinion that research studies

should capture the inner world and the personal perspective of the people being studied (Neuman, 2007).

### 3.1.3 Critical Theory Worldview

The paradigm of Critical Theory mixes nomothetic and ideographic approaches (Neuman, 2011; Neuman, 2007). This paradigm shares many features with the interpretive approach. Based on the views of the proponents of the Critical Theory Worldview, social science is defined as a "critical process of inquiry that goes beyond surface illusions to uncover the real structures in the material world in order to help people change conditions and build a better world for themselves" (Neuman, 2011 p.108).

The whole essence of critical theory is to reveal hidden facts in order to liberate and empower people (Neuman, 2011). As far as critical theory worldview researchers are concerned, how a research problem is approached; the types of questions asked in the research study; and the research purpose are more important than the research techniques (Neuman, 2011). This implies that both quantitative and qualitative approaches can be used to address the research problem. According to Creswell and Plano-Clark (2011), critical realism combines a realist ontology and a constructivist epistemology. The realist ontology separates the world from human perceptions, theories, and constructions (positivism); the constructivist epistemology assumes that they are inseparable (interpretive worldview). Table 3.2 shows the summary of the assumptions and the ideas of the Positivist, the Interpretive and the Critical Theory World Views.

**Table 3.2: Assumptions and ideas of the Positivist, Interpretive and Critical Theory World Views**

| | Positivist Worldview | Interpretive Worldview | Critical Theory Worldview |
|---|---|---|---|
| **Research purpose** | To discover laws | To contextualise social meaning | To liberate and empower people |
| **Theoretical lens** | Essentialist view | Constructionist view | Multiple levels of reality |
| **Description of social science** | Value free and objective | Relativistic with respect to value position | Possess a moral-political dimension |
| **Human nature** | Individualistic (rationally acting individuals) | Interactions and reinforce shared meaning | Relational and shaped by social structures |
| **Stance on human agency** | Deterministic | Voluntaristic | Bounded autonomy |
| **Scientific knowledge** | Better than other forms of knowledge | Not better than other forms of knowledge | Not perfect but can fight false consciousness |
| **Theory of social reality** | Nomothetic and advance knowledge via deductive reasoning | Idiographic and advance knowledge via inductive reasoning | Combines nomothetic and ideographic approaches |
| **Theory verification** | Via replication by other researchers | Via postulate of adequacy with people being studied | Via praxis (practical actions and established practices) |
| **Nature of social evidence** | Inter subjectivity | Contingent and context specific | Theory dependent |
| **Approach to knowledge generation and usage** | Technocratic perspective | Transcendent perspective | Transformative perspective |

Developed from Neuman (2011)

### 3.1.4 Participatory World View

A participatory world view has been said to be prompted by political concerns, empowerment, and the need to improve the society (Creswell and Plano-Clark, 2011; Creswell, 2009). This worldview, therefore, has some features in common with the critical theory worldview, such as empowering the individuals being studied. The focus is on how to address the problems of marginalisation, and also on the consequences of the research. The participatory paradigm tends to be more associated with qualitative approaches than with quantitative approaches, and the researchers work together with individuals who are experiencing injustices in the society so as to address the issues affecting them (Creswell and Plano-Clark, 2011). As it is a change-oriented worldview, the participatory worldview focuses on how to change the social world for the better.

### 3.1.5 Pragmatist Worldview

The focus of the pragmatist worldview is on what works, and the worldview is typically pluralistic, problem-centred, and real-world practice-oriented (Creswell and Plano-Clark, 2011). The pragmatist worldview is, by and large, associated with mixed methods research (Creswell and Plano-Clark, 2011), where pragmatist researchers focus on: (1) the consequences of the research; (2) the primary importance of the research questions; and (3) the use of multiple methods in collecting the data that best answer the research questions and address the problems under investigation. Creswell (2009) also opined that pragmatist researchers often use the two research methods of quantitative and qualitative approaches, to give the best answers to the research problems.

### 3.1.6 Philosophical Assumptions for Mixed Methods Research

Five different worldviews have been reviewed and, of these, three paradigms are considered relevant to a mixed methods research methodology: Critical Theory; Participatory; and Pragmatist World Views. Like the pragmatist paradigm that is based on the idea of what works, critical social science researchers may use any research technique. This is because they are more concerned with how to approach the research problem; the types of research questions; and the purpose of the research study, than in the research techniques. Another paradigm found to be relevant to

mixed methods research in the literature is the Transformative-emancipatory paradigm (Creswell and Plano-Clark, 2011). This paradigm also supports mixing quantitative and qualitative approaches in a single research study (Creswell and Plano-Clark, 2011).

The pragmatist paradigm was adopted for the purpose of this research study. This is because the paradigm has been widely embraced by many authors as the World View for mixed methods research (c.f. Creswell and Plano-Clark, 2011; Teddlie and Tashakkori, 2009; Tashakkori and Teddlie 2003). As noted by Creswell and Plano-Clark (2011), pragmatism has been formally linked to mixed methods research, using diverse approaches, and valuing both objective and subjective knowledge.

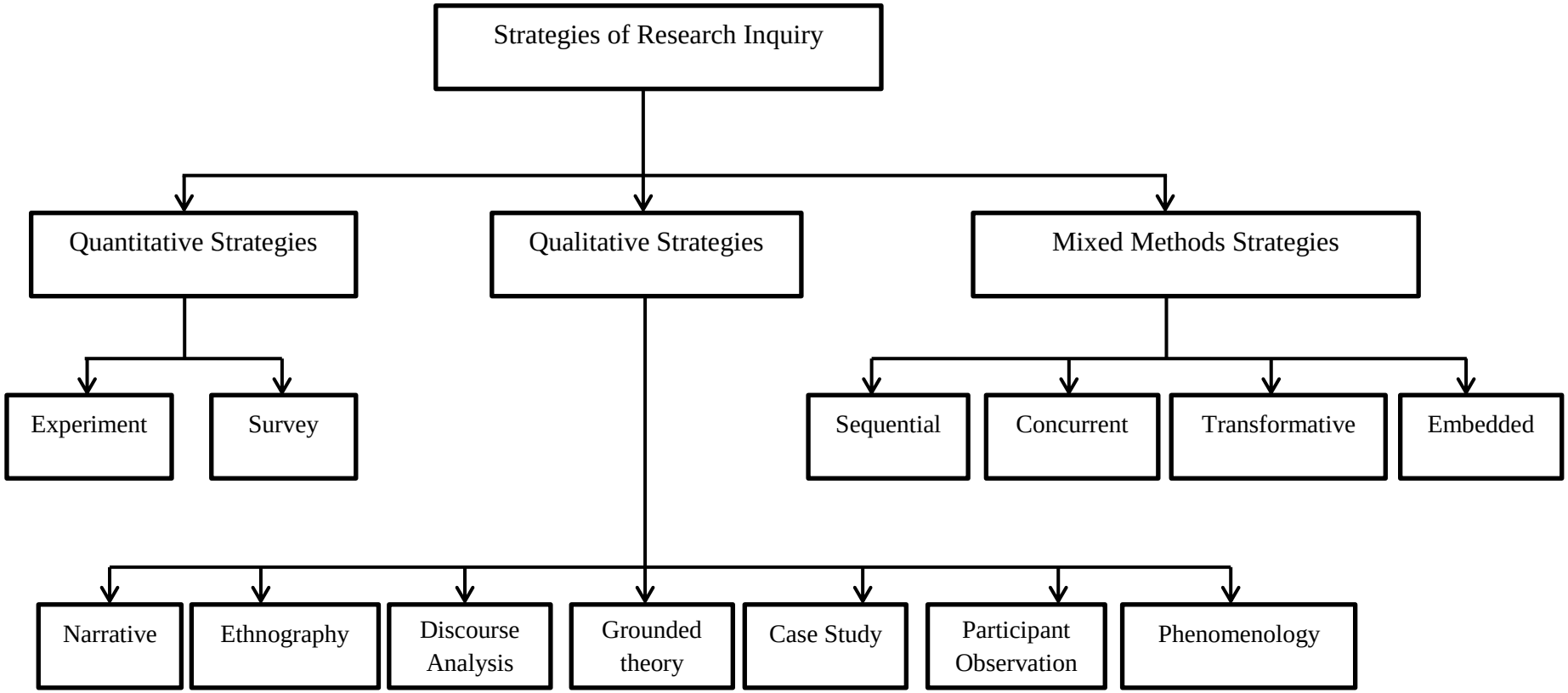
## 3.2 Three Main Strategies of Research Inquiry

There are three main approaches to research inquiry; quantitative, qualitative and mixed methods research designs. Figure 3.2 shows an overview of these approaches and some of the different variants available for researchers from each type. Research designs are specific procedures involved in the data collection, data analysis, report writing and research evaluation (Creswell, 2011).

### 3.2.1 Quantitative Research Strategies

Positivist and post-positivist worldviews are known to be associated with these strategies of inquiry. Such strategies involve the use of methods such as surveys and experiments in recording variation in social life, with respect to categories that can be measured with numbers or attributes that vary in magnitude (Schutt, 2006). In recent times, findings reveal that qualitative strategies have included complex experiments and structural equation models involving many variables, treatments and causal path analysis (Creswell, 2009). According to Creswell (2009), survey research gives a numeric description of the trends, attitudes or opinions of a general population from the study of a sample that gives an accurate representation of the population.

**Figure 3.2: Strategies of Research Inquiry**



Experimental research, on the other hand, helps the researchers to determine if specific treatments influence particular research outcomes. Such assessments are possible by applying specific treatments to one group of samples (group A) and withholding them from another group (group B); the researchers then determine how both groups A and B scored on the outcome(s) (Creswell, 2009). Quantitative research strategies are often used when the motives for research are explanation, description, or evaluation (Schutt, 2006).

### 3.2.2 Qualitative Research Strategies

Qualitative research strategies are designed to capture social life as research participants experience it (Schutt, 2006). These strategies are not meant to capture social life of the participants in categories predetermined by the researchers. They do, however, rely on written or spoken words of the participants, or on observations that do not have a direct numerical interpretation, and involve exploratory research questions, inductive reasoning, an orientation to social context, and the meaning attached by participants to events and to their lives (Schutt, 2006). Based on the findings from Creswell (2009), some of the ways to conduct qualitative are summarised as follows.

***Ethnography:*** This is a study of an intact cultural group in a natural setting over a long period of time. The primary sources of data are observations and interviews. ***Grounded theory:*** This approach gives a general and abstract theory of a process, action or interaction grounded in the participants' views. During the course of the research, there are two main events: (i) a constant comparison of data with emerging categories and (ii) a theoretical sampling of different groups in order to optimise the similarities and the differences of research information.

***Phenomenological research:*** This type of research helps to identify the essence of human experiences about a phenomenon, and it is based on the view of the participants.

***Narrative research:*** This involves the study of the lives of individuals; the research information is presented in a narrative chronology.

***Case Study Research:*** This involves a time-bound, in-depth exploration of a program, event, activity, or process of one or more individuals.

### 3.2.3 Mixed Methods Research Design Strategies

The use of a mixed methods approach in research studies provides a better understanding of research problems than either the quantitative approach or the qualitative approach alone (Creswell and Plano-Clark, 2007). Schutt (2006) describes the use of multiple research methods to study one research question as triangulation; the strategies, therefore, allow the researchers to obtain the social reality of the issues being studied from different perspectives. Creswell and Plano-Clark (2011) identified the following core characteristics of mixed methods research: (1) data collection and analysis involves both qualitative and quantitative approaches, and the processes are guided by the research questions; (2) the two forms of data are integrated simultaneously by combining them, or sequentially by building one on another, or by embedding one within the other; (3) priority is given to one or both forms of data depending on the nature of the research study and the research questions; (4) the procedures of mixed methods research can be applied in a single study or in multiple phases of a program of study; (5) the procedures are framed within philosophical worldviews and theoretical lens, and they are not limited to either quantitative or qualitative study; and (6) the procedures form the basis of the research design that guides the plan for conducting mixed methods study.

Findings from the literature reveal that using mixed methods research offers some advantages. According to Johnson and Onwuegbuzie (2004), Creswell (2009), and Creswell and Plano-Clark (2011), these include:

1. Mixed methods research gives room for the analysis of both patterns and causes of behaviour.
2. It improves the reliability of the research findings. The overall strength of the research study is greater than either qualitative or quantitative research.
3. It facilitates the triangulation of data as a means of seeking convergence across qualitative and quantitative methods, and a mechanism to improve the quality of the research findings.
4. It provides strengths that offset the limitations and the biases inherent in both quantitative and qualitative methods.

5. There are more evidences towards solving every research problem, and also towards answering every research question with a mixed methods research than with either qualitative or quantitative research alone.
6. Mixed methods research triumphs over the dichotomy between the objective and the subjective views of the quantitative and the qualitative research approaches respectively. Thus, it provides a bridge between the adversarial differences between the two approaches.
7. A mixed methods approach allows the use of multiple worldviews in research studies, and enables the researcher to approach the research studies in a more practical way than either of the two approaches. There is provision for the use of all methods possible to address the research problems.

### 3.3 Research Strategy Adopted for this Study

Table 3.3 summarises the features of the three main research methods, which relate to the forms of data collection, analysis and research interpretation for each type.

**Table 3.3: Features of Quantitative, Qualitative and Mixed Methods**

| | Quantitative Methods | Qualitative Methods | Mixed Methods |
|---|---|---|---|
| **Nature** | Pre-determined | Emerging | Pre-determined and Emerging |
| **Type of Questions** | Instrument based | Open-ended | Open and closed-ended |
| **Type of Data** | Performance, Attitude, Observational and Census | Interview, Observation, Document and Audio-visual | Multiple sources of data |
| **Type of Analysis** | Statistical | Text and Image | Statistical and Text |
| **Research Interpretation** | Statistical | Themes and Patterns | Across databases |

(Source: Creswell, 2009)

Among other things, factors that determine the choice of one research strategy over another type include: the worldview; the nature of the research problem; the personal experience of the researcher; the targeted audience for the research report; and the purpose of the study, for example (Creswell, 2009; Yin, 2009). According to Yin (2009), it is the research purpose that should dictate the research approaches and methods. This implies that the two most prominent among these factors are the nature of the research problem and the research purpose. The nature of the research problems should be central to the method(s) to be adopted in solving the problems. While

qualitative research questions aim to explore the complex set of factors surrounding a phenomenon or concept in a study, quantitative research questions aim to explain why something occurs or to describe relationships among research variables (Creswell, 2009).

From the description of the exploratory and the explanatory sequential designs by Creswell and Plano-Clark (2011 p. 81-90), it could be inferred that qualitative research studies are exploratory while quantitative research studies are explanatory. Neuman (2011), Neuman (2007), Yin (2009), Forza (2002) and Bless et al. (2000) identified some research scenarios that necessitate the adoption of the exploratory method. Some of these scenarios include: when very little is known about the areas of investigation; where a need to develop new concepts in the areas of research study exists; when there is a need to determine how best to measure the emerging constructs; when there is a need to discover comprehensive insights and facets of the phenomenon under study; and when there is a need to establish associating factors and concepts of the investigated constructs in relation to the phenomenon of interest.

Therefore, an exploratory research will help a researcher to generate information on research problems emanating from relatively new fields or under-researched constructs in any research field. An explanatory research also helps to elaborate and make clear the relationships among variables in research studies (Neuman, 2011). According to Bless et al. (2000), an explanatory research fits perfectly into answering research questions that demand the relationships among research variables and how a change in one or more variables affects the other variable(s).

### 3.3.1 Analysing the Research Problems and Questions

According to Bryman and Bell (2007), research questions are crucial in guiding the literature search and in determining the research methodology. This reveals the need for the preliminary research questions at the early stage of many organisational studies. Huberman and Miles (2002) advise that these preliminary research questions are tentative and are subject to revision in order to accommodate the findings from the literature. Based on the findings and the identified gaps in the literature, the research questions in chapter 1 have been refined, and the research hypotheses defined in section 2.16 have been carefully re-formulated. Table 3.4 compares and contrasts the preliminary and the refined research questions.

**Table 3.4: Preliminary and Revised Research Questions**

| Preliminary Research Questions | Revised Research Questions |
|---|---|
| **General research question:** Can marketing and organisational innovations help SMEs in Nigeria profit from existing technological innovations from the advanced countries? | 1. What are the factors promoting Organisational and Marketing Innovations (OMIs) capabilities of SMMSOs in the developing economies? |
| **Specific research questions:**<br>1. Do Nigerian SME's owners or managers understand the concept of organisation and marketing innovations? | 2. How does an organisational context (organisational structure and culture) affect the Contextual Individual Ambidexterity (CIA) of the shop floor employees and OMIs capabilities? |
| 2. Does a firm's absorptive capacity relate to organisational innovation and marketing innovation? | 3. What is the relationship between the CIA of the managerial employees and Organisational Ambidexterity? |
| 3. Are organisational structure and culture important to organisational innovation and marketing innovation? | 4. How does CIA level of the managerial employees affect the Organisational Innovation capability, the Marketing Innovation capability, and the Organisational Performance of SMMSOs in the developing economies? |
| 4. Do organisational innovation and marketing innovation affect the adoption of technological innovations in Nigerian SMEs? | |
| 5. Do organisational innovation and marketing innovation contribute to the optimal utilisation of adopted technological innovations, and overall firm performance in Nigerian SMEs? | |

Table 3.5 also compares and contrasts the preliminary and the refined research hypotheses. The research questions and hypotheses have also been refined to accommodate the findings from the initial exploratory study identified during the preliminary phase of this study, covered later in chapter 4. Having identified from the literature that studies relating organisational context to Organisational and Marketing Innovations capabilities; Individual Ambidexterity; and Organisational Performance are very scarce, the specific research hypotheses have also been changed to general hypotheses. Many of the issues addressed in this study have not yet received significant attention in the literature, contrary to the initial view of the researcher during the early stage of this study.

**Table 3.5: Preliminary and Revised Research Hypotheses**

| Preliminary Research Hypotheses | Revised Research Hypotheses |
|---|---|
| H1. Organic structure will promote the development of organisational innovation capability in Nigerian SMEs. | H1. An Organic Structure will promote the development of an Organisational Innovation capability. |
| H2. Organic structure will promote the development of marketing innovation capability in Nigerian SMEs. | H2. An Organic Structure will promote the development of a Marketing Innovation capability. |
| H3. Adhocracy culture will promote the development of organisational innovation capability in Nigerian SMEs. | H3. An Organic Structure will positively relate to Contextual Individual Ambidexterity of the shop floor employees. |
| H4. Adhocracy culture will promote the development of marketing innovation capability in Nigerian SMEs. | H4. An Organic Structure will positively relate to Contextual Individual Ambidexterity of the managerial staff. |
| H5. Organisational innovation capability will positively correlate to the absorptive capacity of Nigerian SMEs. | H5. An Organic Structure will positively relate to the Organisational Ambidexterity. |
| H6. Marketing innovation capability will positively correlate to the absorptive capacity of Nigerian SMEs. | H6. Contextual Individual Ambidexterity of the managerial staff will positively relate to Organisational Ambidexterity. |
| H7. Nigerian SME's organisational innovations will facilitate the optimal utilisation of adopted technological (process and product) innovations and yield improved performance. | H7. Contextual Individual Ambidexterity of the managerial staff will positively relate to organisational performance. |
| H8. Nigerian SME's marketing innovations will facilitate increase in the marketable outputs of adopted technological (process and product) innovations and yield improved performance. | H8. Organisational Ambidexterity will positively relate to organisational performance. |
| | H9. Adhocracy and Clan cultures will promote the development of Contextual Individual Ambidexterity of the shop floor employees. |
| | H10. Adhocracy and Clan cultures will promote the development of an Organisational Innovation capability. |
| | H11. Adhocracy and Clan cultures will promote the development of a Marketing Innovation capability. |
| | H12. A Knowledge Sharing Culture will positively relate to Contextual Individual Ambidexterity of the shop floor employees. |
| | H13. A Knowledge Sharing Culture will positively relate to Organisational Innovation capability. |
| | H14. A Knowledge Sharing Culture will positively relate to Marketing Innovation capability. |
| | H15. Contextual Individual Ambidexterity of the managerial staff will positively relate to Organisational Innovation capability. |
| | H16. Contextual Individual Ambidexterity of the managerial staff will positively relate to Marketing Innovation capability. |

#### 3.3.1.1 Research Question 1

Research Question 1 (RQ1) requires an investigation of factors promoting the Organisational and Marketing Innovations capabilities. Being a relatively under-researched area, an initial *exploratory and qualitative* is required for an in-depth understanding, to be followed by a *quantitative* study to generalise the initial qualitative findings. The second phase will involve a larger sample than the study sample in the first phase in order to generalise the exploratory results to a population. Therefore, a combination of both qualitative and quantitative data and methods would provide the best information for this research question.

#### 3.3.1.2 Research Question 2

In Research Question 2 (RQ 2), there are five research constructs; *Organisation Structure, Organisation Culture, Organisational Innovation capability, Marketing Innovation capability* and *Contextual Individual Ambidexterity*. RQ 2 inquires about the relationships among these variables. The revised research hypotheses *H1, H2, H3, H4, H5, H9, H10, H11, H12, H13 and H14* defined in Table 3.5 are the predictions the study makes about the expected relationships among these variables.

#### 3.3.1.3 Research Question 3

In Research Question 3 (RQ 3), there are two research variables: CIA of managerial employees' CIA; and *Organisational Ambidexterity*. RQ 3 inquires about the relationships between these variables and the revised research hypothesis *H6,* defined in Table 3.5, is the prediction the study makes about the expected relationship between these variables.

#### 3.3.1.4 Research Question 4

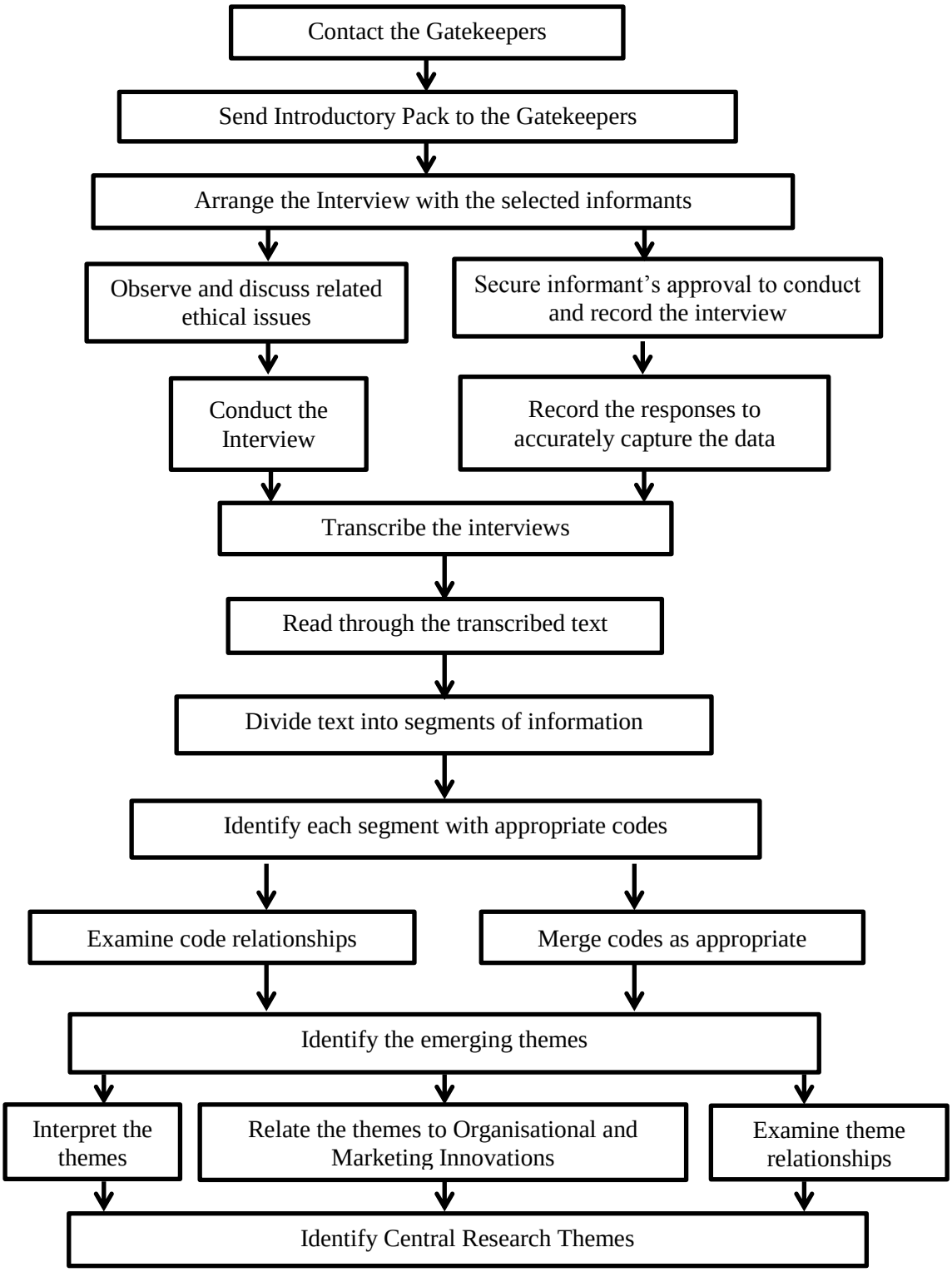
The four research variables in Research Question 4 (RQ 4) are: *CIA of the managerial staff; Organisational Innovation capability; Marketing Innovation capability; and organisational performance.* RQ 4 inquires about the relationships among these variables and the revised research hypotheses *H7, H8, H15 and H16,* stated in Table 3.5, are the predictions the study makes about the expected relationships among these variables. The foregoing analysis revealed that a mixed methods research strategies would be needed to provide sufficient information and comprehensive solutions to these research questions. This study, therefore, adopted an exploratory-analytical

sequential research design with two distinct phases, the explorative phase and the analytical phase.

### 3.3.2 The Explorative Research Phase

Figure 3.4 summarises the steps in the explorative phase of this research.

**Figure 3.3: Flow Chart for the Steps in the Explorative Research Phase**



As summarised earlier in this study in section 2.14, findings from the literature reveal that research on Organisational and Marketing Innovations has received limited attention. The lack of prior research on non-technological innovations has been attributed to poor data availability. In addition, little is known about the underlying factors promoting organisational and marketing innovations. This, consequently, revealed the need for an initial explorative study on these soft components of the innovation process. This phase would enable the researcher to determine the factors promoting Organisational and Marketing Innovations capabilities and their possible benefits.

#### 3.3.2.1 The Gatekeepers

Marshall and Rossman (2006) reveal the need to secure access to the research site. The gatekeepers are defined as those that provide access to the research site and permit the research to be done (Creswell, 2009). This can be facilitated by a research introductory pack, which is often prepared in advance by the researcher. The pack is submitted to the gatekeepers for review and should include, among other things: the research objectives; the reason(s) for choosing the sample companies; the research activities within the company; the benefits of the study to the participating companies; consideration of any ethical issues; and the mode of presenting the research outcomes (Corbin and Strauss, 2008; Bilmer 2008; Marshall and Rossman, 2006; Bogdan and Biklen, 2007). A copy of the introductory pack for the current research is included as Appendix A. A brief profile of the researcher published by one of the Nigerian Newspapers, the Nigerian Tribune (see Appendix B) was also attached to the pack.

#### 3.3.2.2 Data Collection

One of the advantages of qualitative research is that it is known for giving access to many alternative sources of data: interviews; observations; videos; documents; drawings; dairies; memoirs; newspapers; biographies; historical documents; and autobiographies (Corbin and Strauss, 2008; Creswell, 2009; Fielding and Thomas, 2008), for example. These alternative sources of data have been grouped and summarised into four different types, as shown in Table 3.6.

**Table 3.6: Qualitative Data Collection Types**

| | Option Within Types | Advantages | Limitations |
|---|---|---|---|
| Observations | ➢ Complete participant: researcher conceals role.<br>➢ Observer as participant: role of researcher is known.<br>➢ Participant as observer: observation role secondary to participant role.<br>➢ Complete observer: researcher observes without participating. | ➢ Researcher has a first-hand experience with participant.<br>➢ Researcher can record information as it occurs.<br>➢ Unusual aspects can be noticed during observation.<br>➢ Useful in exploring topics that may be uncomfortable for participants to discuss. | ➢ Researcher may be seen as intrusive.<br>➢ Private information may be observed that researcher cannot report.<br>➢ Researcher may not have good attending and observing skills.<br>➢ Certain participants may present special problems in gaining rapport. |
| Documents | ➢ Public documents, such as minutes of meetings, or newspapers.<br>➢ Private documents, such as journals. Diaries, memo or letters. | ➢ Enables a researcher to obtain the language and words of participants.<br>➢ Can be accessed at a time convenient to researcher.<br>➢ Represents data which are thoughtful in that participants have given attention to compiling them.<br>➢ As written evidence, it saves a researcher the time and expense of transcribing. | ➢ Not all people are equally articulate and perceptive.<br>➢ May be protected information unavailable to public or private access.<br>➢ Requires the researcher to search out the information in hard-to-find places.<br>➢ Requires transcribing or optically scanning for computer entry.<br>➢ Materials may be incomplete.<br>➢ The documents may not be authentic or accurate. |
| Audio-Visual Materials | ➢ Photographs<br>➢ Videotapes<br>➢ Art Objects<br>➢ Computer software<br>➢ Film | ➢ May be an unobtrusive method of collecting data.<br>➢ Provides an opportunity for participants to directly share their reality.<br>➢ It is creative in that it captures attention visually. | ➢ May be difficult to interpret.<br>➢ May not be accessible publicly or privately.<br>➢ The presence of an observer may be disruptive and affect responses. |
| Interviews | ➢ Face-to-face: one-on-one, in-person interview.<br>➢ Telephone: researcher interviews by phone.<br>➢ Focus group: researcher interviews participants in a group.<br>➢ E-mail internet interview. | ➢ Useful when participants cannot be directly observed.<br>➢ Participants can provide historical information.<br>➢ Allows researcher control over the line of questioning. | ➢ Provides indirect information filtered through the views of interviewees.<br>➢ Provides information in a designated place rather than the natural field setting.<br>➢ Researcher's presence may bias responses.<br>➢ Not all people are equally articulate and perceptive. |

(Source: Creswell, 2009 p. 179-180)

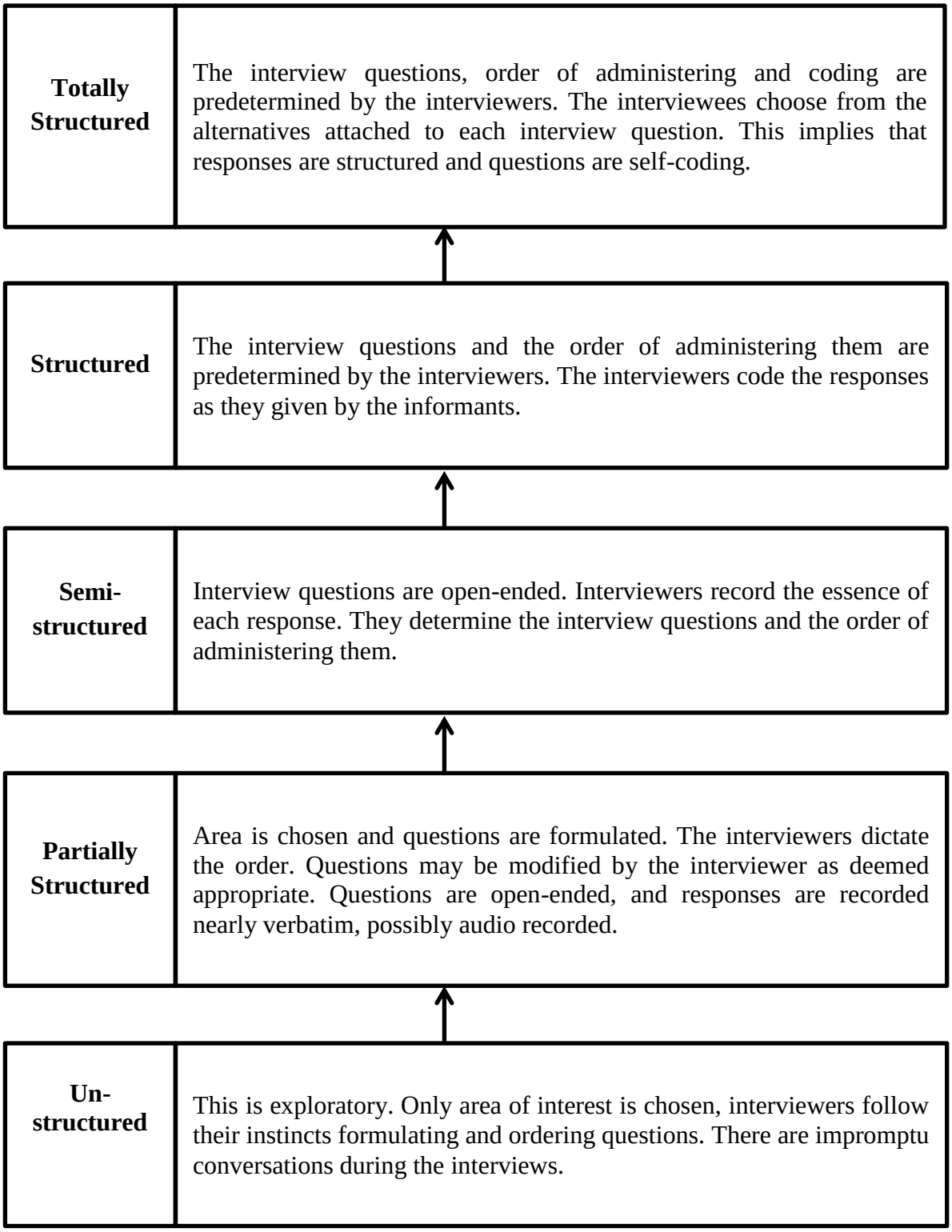
Among these four sources of qualitative data, interviews have been identified as the prime qualitative data collecting tool and are particularly useful in exploring what is especially significant about a person or situation (Krathwohl, 2004). Therefore, face-to-face interviews were adopted as the main source for data collection in this explorative phase. This required the researcher to conduct an in-depth interview with the owners and/or individuals occupying a managerial position in the selected companies. Following the approach of existing studies, the interviewees were selected using a snowball technique (e.g. Pellegrini-Masini and Leishman, 2011; Walsh et al., 2010), which is defined as a non-probability technique where the present research informants or study subjects help in obtaining additional research informants or study subjects. It is a referral sampling where previously identified members identify other members of the population (Neuman, 2011); Krathwohl, 2004); Fink, 2003). The detailed profiles of the selected companies are presented in Appendix C.

According to Fielding and Thomas (2008 p. 249), two principles inform the conducting of research interviews; (i) "questioning should be as open-ended as possible, in order to gain spontaneous information rather than rehearsed positions", and (ii) "questioning techniques should encourage respondents to communicate underlying attitudes, beliefs and values, rather than glib or easy answers". Open-ended questions was used to enable the informants to respond as freely as they deem fit (Neuman, 2011; Krathwohl, 2004). This gave room for an in-depth exploration of organisational and marketing innovations constructs. As a guide, Figure 3.5 shows the continuum of interview style with increasing amounts of structure. A copy of the interview guide for the current study is place in Appendix D.

#### 3.3.2.3 Data Transcription

Technologies exist for the transcription of data, with 90 per cent accuracy. However, in addition to their high cost, such software only works well with a single voice with which it has been pre-trained (Fielding and Thomas, 2008). It is, therefore, less than suitable for use in an interview situation, where more than one voice is involved. As a result, the researcher manually transcribed the recorded audio files into text. According to Fielding and Thomas (2008), there are two types of data transcription; Selective and Verbatim. In order to prevent the loss of respondent data, verbatim transcription was used, despite its laborious and time-consuming nature.

**Figure 3.4: Continuum of Interview Style (Unstructured-Structured)**




Source: Developed from Krathwohl (2004)

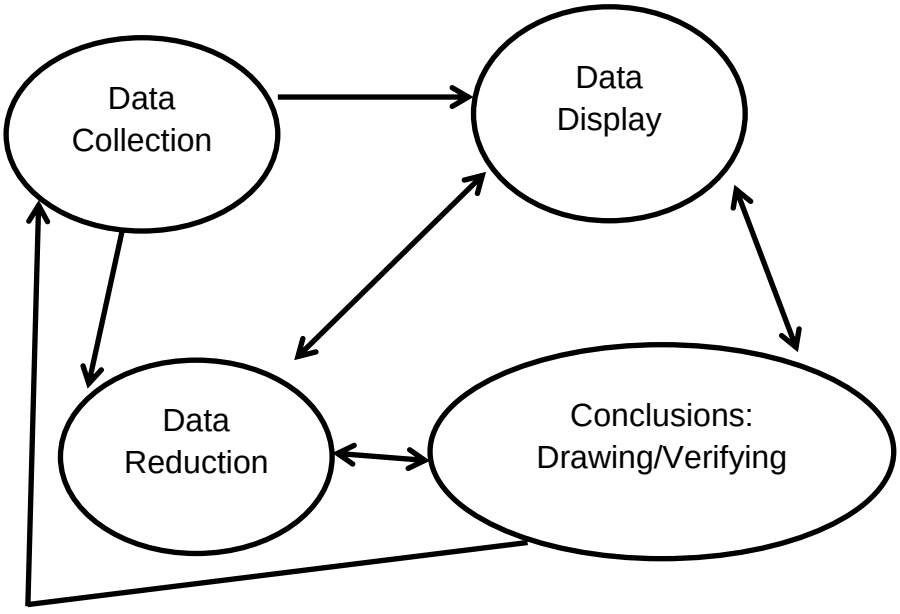
### 3.3.2.4 Qualitative Data Analysis

Analysing qualitative data involves a systematic consideration of the data to identify themes and concepts that will contribute to the solutions needed to address the research problems (Fielding and Thomas, 2008). Qualitative data analysis involves a coding process where a researcher interacts with raw data in order to transform it at a conceptual level (Corbin and Strauss, 2008). The focus at this stage, according to Miles and Huberman (1994), were the three concurrent flows of activities described below:

a) Data Reduction: This involves selecting, focusing, simplifying, abstracting, and transforming the transcribed data.
b) Data Display: This gives an organised and summarised assembly of information that allows conclusion drawing and action.
c) Conclusion Drawing and Verification: This requires the researcher to maintain openness. The meanings emerging from the data have to be verified for their plausibility, their robustness and their validity.

Figure 3.6 shows how these activities interrelate during the course of analysis.

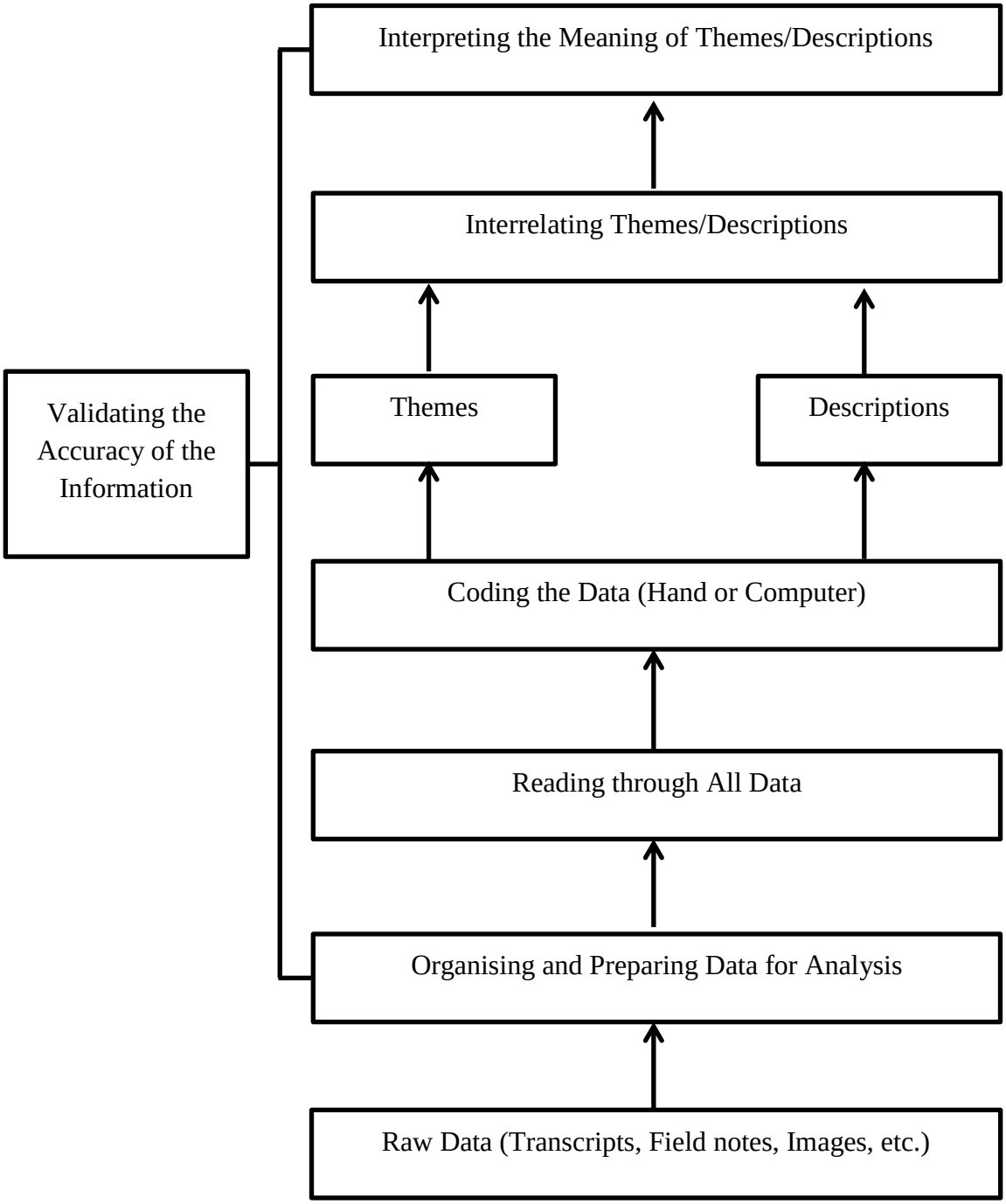
**Figure 3.5: Components of Data Analysis: Interactive Model**




Source: Miles and Huberman (1994 p. 12)

The interview transcripts was subject to content analysis (Silverman, 2000), to identify any emerging themes, according to the steps illustrated in Figure 3.7.

**Figure 3.6: Data Analysis in Qualitative Research**




Source: Creswell (2009 p.185).

### 3.3.3 The Analytical Research Phase

The second phase of the research study, discussed later in chapter 5, involved a quantitative survey of a larger sample of individuals working in Nigerian SMEs than the number involved in the study sample in the first phase, reported later in chapter 4. Unlike in the exploratory phase, these individuals involved both the managerial staff and the shop floor staff. This phase facilitated numeric description of the attitudes and opinions of a population by studying a sample from the population through the use of a questionnaire (Creswell, 2009). According to Kendall and Kendall (2002), questionnaires are useful in gathering information from key organisation members about attitudes, beliefs, behaviours, and characteristics.

The aim of the analytical phase was to measure and understand causal relations among the research constructs, identified both from the literature and the pilot study phase. This phase follows existing quantitative studies on employees' activities that draw upon a study sample that is composed of large numbers of employees from different companies (e.g. Mom et al., 2009; Okpara, 2009; Cheng et al., 2010; Mathew et al., 2012). In order to minimise compromising the external validity of the findings that could emanate from industry specific effects, the target companies will include Nigerian SMEs operating in different manufacturing and service industries. This was in line with the method adopted by Mom et al. (2009) and Gibson and Birkinshaw (2004).

#### 3.3.3.1 Sampling Strategy

Sampling methods in a research study are divided into probability and nonprobability techniques (Neuman, 2011; Krathwohl, 2004; Fink, 2003). While all probability techniques involve the random sampling of units from the population at some stage in the sampling process, there is no random selection of the study sample in nonprobability techniques (Krathwohl, 2004). Probability techniques provide a statistical basis for a representative sample and every member of the target population has a non-zero probability of being included in the sample (Fink, 2003). In non-probability techniques, the participants are chosen based on the researcher's judgment, with respect to the characteristics of the target population and the needs of the study

(Fink, 2003). A good sample ensures the collection of sufficient and representative data (He, 2009), and in many studies, sample size is frequently increased so that a study's positive result is not missed (Krathwohl, 2004). The study sample may affect the validity of the analytical results (He, 2009). According to Krathwohl (2004), a large sample size is necessary because of the following reasons:

- It increases the certainty required of the inferential conclusions from sample to population;
- The researcher is more precise about the exact nature of the target population;
- It enables the researcher to accurately estimate the characteristic of interest, particularly when the population varies considerably with respect to that characteristic;
- It enables the researcher to increase the sensitivity or power of the study.

Frequently used probability sampling techniques include: simple random sampling; stratified random sampling; systematic sampling; and cluster or multi-stage sampling (Krathwohl, 2004; Schutt, 2006, Fink, 2003). Examples of non-probability sampling methods are: convenience sampling; snowball sampling; quota sampling; and focus groups (Krathwohl, 2004; Fink, 2003). Table 3.7 and Table 3.8 summarise the description, advantages and disadvantages of the commonly used probability and non-probability sampling techniques, respectively.

Since the researcher did not have access to an accurate population listing of Nigerian SMEs, snowball sampling was adopted for the analytical phase. According to Fink (2003) and Robson (2002), the snowball sampling technique is not only for the hidden populations, it is very useful when it is difficult or impractical to obtain a list of names for sampling, or to identify all the members of the population. The use of this technique follows existing research studies on manufacturing and service organisations (c.f. He, 2009; O'Cass and Sok, 2012; Tang and Tang, 2012; Warren et al., 2000; Chi and Gursoy, 2009).

**Table 3.7: Commonly Used Probability Sampling Methods**

| Sampling Methods | Description | Advantages | Disadvantages |
|---|---|---|---|
| Simple random | It is the basic method and each unit of population has an equal chance of being selected. | It is simple to use. It uses a simple procedure that generates random numbers. | Members of a subgroup of interest may not be given adequate representation. |
| Stratified random | To ensure sample representativeness, the study population is grouped according to meaningful characteristics. | Analyses of subgroups within the selected sample are possible. Sampling variations are lower than for simple random sampling and the sample is more likely to represent the population. | There is a need for computation of sample sizes for each subgroup. The presence of many subgroups makes time-consuming and costly. |
| Systematic | The researcher selects every nth item beginning at some random point and cycling through the list. To draw a sample of 10 from a sampling frame of 100 names, every tenth name is selected instead of bothering with random numbers. | It is simple to draw if population list is ordered with a variable related to what is being studied. It is convenient; existing list is used as a sampling frame. | It is not feasible where existing list is not available. The researcher must watch for recurring patterns within the sampling frame (stratification effect or periodic ordering) to avoid biased estimates. |
| Cluster or Multistage | The researcher uses a sampling unit such as squares in a grip placed over a map or natural grouping and takes a random sample of units. Either all individuals or a random sample of individuals are investigated in each unit; depending on the nature of the study and available resources. | It is convenient, reduces cost and time if clusters are used. Sampling frame is needed only for units used in sample. It allows studies of individual clusters and comparison of clusters. | It may result in larger error in estimating population values than other probability sampling methods. It requires each member of population be assigned to a cluster. |

Developed from Krathwohl (2004), Schutt (2006) and Fink (2003)

**Table 3.8: Commonly Used Non-probability Sampling Methods**

| Sampling Methods | Description | Advantages | Disadvantages |
|---|---|---|---|
| Convenience sampling | The researcher gets any cases in any convenient manner. It involves the use of a readily available group of individuals or units. | It is a practical method because it relies on readily available units. | Participants may not fully represent the target population because the sample is opportunistic. |
| Quota sampling | The researcher divides the population into subgroups and a sample is selected based on the proportions of subgroups needed to represent the proportions in the population. The researcher establishes quotas for characteristics of individuals to ensure they appear in the sample as they occur in the population. | It is a practical approach if reliable data exist to describe proportions. | It requires prior knowledge of the characteristics of stratifying variables. If not properly monitored, the individuals in any quota may simply be a convenience sample of that group. Oversampling of such individuals could lead to non-representative sample and result biased results. There is also a need for up-to-date records of the population. |
| Snowball sampling | This is a referral sampling where previously identified members identify other members of the population. | It is very useful when it is difficult or impractical to obtain a list of names for sampling. | There is little or no control over who is named. Recommendations may produce a biased sample. |
| Focus groups | The researcher selects groups of 6 or 10 people to serve as representatives of a population. | This is useful in guiding survey development. | The relatively small group of people selected may not be a valid representative of the larger group that will be surveyed. |

Developed from Neuman (2011), Krathwohl (2004) and Fink (2003)

Although the non-probabilistic snowball technique lacks the feature of random selection, in that it may limit the representativeness of the sample, it offers the following advantages for this study:

1) It provides easy access to the research site since there is no predefined population listing for Nigerian SMEs.
2) The snowball sampling technique facilitates a better response rate as a result of the established contact and sample members. This, consequently, increases the sample size and the representativeness of the sample.
3) The technique will ensure that all respondents are relevant to the study.
4) The technique will also avoid the complexity that is associated with stratified random sampling.

### 3.3.3.2 Data Collection Tool

A questionnaire is one of the most widely used data collection techniques for gathering large amounts of data from many respondents (Krathwohl, 2004). Since one of the aims in the data collection phase is to gather large amounts of research data from many respondents, questionnaire approach were adopted for data collection. Because each participant responds to the same set of questions, questionnaires provide a consistent, efficient and economical way of collecting research data from a large sample prior to quantitative analysis (Saunder et al., 2007). Questionnaires are frequently used to examine and explain relationships among the research variables and constructs (De Vaus, 2002). Among other things, key features of every questionnaire include: simple language; specific; free of bias; not patronising; technically accurate; and suitable for the reading level of the informants (Kendall and Kendall, 2002). There are various methods to administer research questionnaires (Krathwohl, 2004; Kendall and Kendall, 2002), these include: (1) Mail (By post) questionnaires; (2) Email (send as email attachment) questionnaires; (3) Over the web (internet-based) questionnaires; (4) Convening all required informants together at one time; and (5) Researcher administers the questionnaires in person at various locations.

In the first three methods (Mail, Email and Over the web), the researcher allows the respondents to self-administer the questionnaires through the use of e-mails or by directing the informants to a particular website. Although these methods provide a very convenient and cost effective approach, late responses from previous email

conversations, between the researcher and some of the target organisations during the first phase of this study, reveal that using any of these approaches alone may not yield the desired outcomes. Many of those targeted did not even reply to the emails. Hence, difficulty may arise in gathering the required amount of research data within the available time using these approaches. Additionally, there is lack of control over response and return of the completed questionnaire. Moreover, there is a required level of ICT literacy needed for the informants, plus access to a computer system and a reliable internet connection. According to Krathwohl (2004), problems with e-mail questionnaires include: difficulty in obtaining the e-mail addresses of the informants; the restriction to only one computer screen at a time may limit the nature of the questions; e-mail's inclusion of the sender's address limits anonymity of response or makes it difficult to guarantee anonymity; possible low response rate; and the researcher may be unable to address any clarity issues raised by the respondents. However, there is a possibility of combining internet and paper versions for self-completed questionnaires to take cost advantage of the former.

In the current research, the target respondents were from SMEs in different locations from Nigeria; convening them together at one time or in one location was not also feasible. Therefore, the researcher adopted a self-completed questionnaire in two different versions; online and paper. The internet-based self-completed questionnaires were used for organisations with reliable access to internet facilities because of its cost advantage. Self-completed paper questionnaires were used for organisations with no reliable access to internet facilities. Both types of questionnaires had same layout and contained instructions for completion, to the respondents (managerial and non-managerial staff).

#### 3.3.3.3 Timing of Data Collection

With respect to the timing of data collection, there are four possible options. These are: cross-sectional design; longitudinal trend study; longitudinal cohort study; and longitudinal panel study (Krathwohl, 2004). Table 3.9 shows the description, the advantages and the disadvantages of each of the designs available for studying changes over time.

**Table 3.9: Survey Designs for Studying Changes Over Time**

| | Description | Advantages | Disadvantages |
|---|---|---|---|
| **Cross-sectional design** | Data collected at one point in time from groups different in age and/or experience | Considerable savings in time and money | Researchers cannot be certain that results are the same as those obtained from longitudinal data |
| **Longitudinal trend study** | Samples taken twice or more over time from the population that is allowed to change in the interim | No need to keep track of a group over time; no problem with dropouts | Changes may be caused by differences in persons sampled rather than changes in population, and/or by persons entering or leaving the population |
| **Longitudinal cohort study** | Population is kept constant with new samples taken twice or more over time | Changes in group can be traced; events affecting group are known and can be linked to changes | Changes may result from dropouts rather than changes from population; researchers must keep track of all in cohort |
| **Longitudinal panel study** | Selected group of individuals measured two or more times; sample kept constant throughout study | More sensitive to changes than random samples of same size; since reasons for dropout are known, changes in group can be adjusted for; changes can be traced to individuals and therefore possibly to their causes | Panel is difficult to keep intact over long periods of time; researchers must keep track of all in panel; dropouts may be hard to replace; repeated testing or observation may create self-fulfilling expectations and/or change the nature of measured or observed behaviour |

(Source: Krathwohl, 2004 p. 356)

With reference to the research objectives, the research questions and the hypotheses in sections 1.5, 2.15 and 2.16 respectively, the overall interests are summarised as follows:

1) To identify the organisational context and factors promoting: Organisational Innovation Capability; Marketing Innovation Capability; and Contextual Individual Ambidexterity of the non-managerial and managerial employees in Nigerian SMEs.
2) To identify how these constructs affect organisational performance and interrelate with one another.

In order to accurately achieve these objectives, any changes in the research sample and/or population over time must be avoided. Besides considerable saving in time and money, data collected at one point in time will ensure the accuracy of the findings in this study. This is because changes as a result of new employees entering the sample or old employees leaving the sample will be avoided. Since there was no need for measuring or observing changes in the research variables with respect to time, a cross sectional design was adopted for the data collection.

## 3.4 Quantitative Research Design: Instrument Development

According to Robson (2002), questionnaires are meant to help answer the research questions, and to achieve the overall goals of the research. A good questionnaire provides a valid measure of the research questions; gets the co-operation of the respondents; and elicits accurate information (Robson, 2002).

Understanding the tasks of the research informants when they are responding to the questionnaires is crucial to the success of data collection stage in the research. There are some crucial roles and responsibilities of the researchers, and the research informants must be put into consideration when developing the survey instrument. These roles are summarised in Table 3.10.

**Table 3.10: Researchers and Respondents' Roles for Survey Instrument**

| | Roles and responsibilities | By |
|---|---|---|
| 1 | Ability to link the research questions to the survey. | Researchers |
| 2 | Ability to specify the respondents' tasks. | Researchers |
| 3 | Ability to understand the survey questions in the way the research intends. | Respondents |
| 4 | Access to the information needed to answer the survey questions. | Respondents |
| 5 | Willingness to answer the survey questions in the form called for. | Respondents |
| 6 | Ability to analyse the responses and present findings without violating any research ethical standards. | Researchers |

Adapted from Robson (2002)

Factors to secure a good response rate include: securing the approval of the gatekeepers; covering letter; follow-up letter; use of incentives; the appearance of the questionnaire; clarity of wording; simplicity of design; clear instructions; interesting opening or initial questions; (Robson, 2002). It is worth stressing that a good survey instrument must have strong psychometric properties (Creswell and Plano-Clark, 2011). Findings from the identified gaps in the literature, in chapter 2, and the themes from the preliminary study, covered later in chapter 4, played crucial roles in developing the survey instrument. Based on the findings from DeVellis (1991) and Creswell and Plano-Clark (2011), the following procedures are important for instrument development:

Step1: Determine what to measure, and identify the relevant theory and constructs

Step 2: Generate an item pool and the relevant questions, each asking a single question.

Step 3: Include already validated items from other scales or instruments.

Step 4: Determine the scale of measurement for the items and the physical layout of the instrument.

Step 5: Review the item pool by the experts and revise the item pool if necessary.

Step 6: Pre-test to validate the instrument with a small sample.

Step 7: Evaluate the items for reliability, item variance, item-scale correlations, item performance and other relevant checks.

Step 8: Optimise scale length based on step 7.

### 3.4.1 The Research Constructs

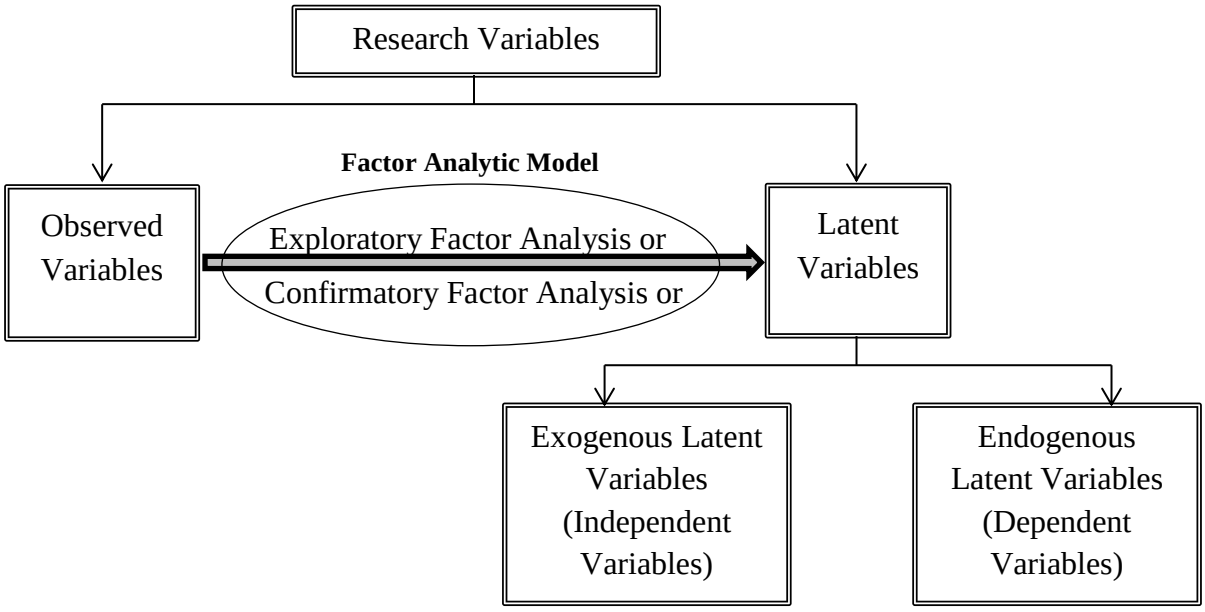
#### 3.4.1.1 Observed Variables

These are variables that are measured by the survey instrument. In order to facilitate the measurement of the latent variables, the observed variables are often linked to the latent variables through factor analytic models (Byrne, 2001).

#### 3.4.1.2 Latent Variables

These are theoretical constructs that cannot be measured or observed directly. They are the underlying constructs the observed indicator variables are designed to measure (Byrne, 2001). These constructs are not directly measured but they are inferred from a set of observed variables (Schumacker and Lomax, 2004). Figure 3.8 show how the observed variables relate to the latent variables. The latent variables are derived from the observed variables through exploratory and confirmatory factor analyses.

**Figure 3.7: Types of Research Variables**




To avoid a same-source bias, two different questionnaires targeting the managerial staff and the non-managerial staff were adopted for the quantitative phase of the study. The items used in these questionnaires were from three different sources: emerging issues from the preliminary qualitative study; theoretical opinions; and descriptions of the constructs as obtained from the literature review; and adapted questions used in relevant questionnaires. The selected questions for the first draft

were based on their clarity and relevance to this study. All variables in the questionnaires with the exception of the background information for the organisation and the survey participants were measured with multiple-item scales. The survey items were based on a five-point Likert scale format.

### 3.4.2 Managerial Staff Questionnaire

#### 3.4.2.1 Organisational Innovation capability

The Organisational Innovation capability (ten items) scale was adapted from Gunday et al. (2011) and the Oslo Manual Guidelines for collecting and interpreting innovation data (OECD/Eurostat, 2005). Table 3.11 shows the final survey items for the Organisational Innovation capability construct. These items were measured on five-point scales ranging from 1 = 'Not at all'; 2 = 'Little extent'; 3 = 'Some extent'; 4 = 'Great extent'; and 5 = 'Very great extent'. Prior studies on innovation strategy suggested a three-year timeframe when measuring innovation constructs at organisational level (He and Wong, 2004; Bierly and Chakrabarti, 1996).

**Table 3.11: Organisational Innovation Survey Items**

| | Organisational Innovation capability Survey Items | Source(s) |
|---|---|---|
| 1 | Implemented new methods that improve flexibility of production or service provision. | 1 |
| 2 | Encouraged new methods that increased capacity of production. | 1 |
| 3 | Implemented methods that facilitated reduction in labour costs. | 1 |
| 4 | Implemented methods that encouraged energy and materials saving in its operation. | 1 |
| 5 | Implemented methods that improved the working conditions. | 1 |
| 6 | Implemented methods that reduced production time. | 1 |
| 7 | Improved communication and interaction among different units. | 1, 2 |
| 8 | Renewed its supply chain management system. | 1, 2 |
| 9 | Introduced techniques that improved the quality of its operations. | 1, 2 |
| 10 | Introduced techniques that improved the quality of its products or services. | 1, 2 |

1 = OECD/Eurostat (2005); 2 = Gunday et al. (2011)

### 3.4.2.2 Marketing Innovation capability

A thirteen-item scale was used to measure Marketing Innovation capability. Seven of these items were adapted from a previously validated scale (Naidoo, 2010). Additional six items were added based on the description of Marketing Innovations in OECD/Eurostat (2005). Table 3.12 shows the survey items contained in this research construct. All these items were also measured on five-point scales ranging from 1 = 'Not at all'; 2 = 'Little extent'; 3 = 'Some extent'; 4 = 'Great extent'; and 5 = 'Very great extent'.

**Table 3.12: Marketing Innovation Survey Items**

| | Marketing Innovation capability Survey Items | Source(s) |
|---|---|---|
| 1 | Implemented creative marketing ideas. | 2 |
| 2 | Implemented improvements that promoted its products or services to its customers. | 1, 3 |
| 3 | Penalised staff for new marketing ideas that did not work. | 1, 3 |
| 4 | Implemented improvements in product pricing. | 1, 3 |
| 5 | Viewed new marketing ideas as too risky. | 1, 3 |
| 6 | Made conscious effort to enter new markets. | 2 |
| 7 | Resisted new marketing ideas. | 1, 3 |
| 8 | Readily accepted improvements in product promotional activities. | 1, 3 |
| 9 | Experienced an increase in different client demands for its products or services. | 2 |
| 10 | Ensured continuous exposure for its products among potential customers. | 2 |
| 11 | Maintained cordial relationships with its customers. | 2 |
| 12 | Repackaged its existing products or services to make them more appealing to its customers. | 2 |
| 13 | Implemented methods that increased the efficiency of delivering goods or services. | 1, 2, 3 |

1 = Hurley & Hult (1998); 2 = OECD/Eurostat (2005); 3 = Naidoo (2010)

### 3.4.2.3 Organisational Ambidexterity

Organisational Ambidexterity is a second-order construct. Its first-order indicators are: Company Explorative orientation and Company Exploitative orientation. In line with the previous studies on Organisational Ambidexterity, two separate scales were used for these two orientations. Lubatkin et al. (2006) suggested a three-year timeframe when measuring Ambidexterity construct at an organisational level.

A twelve-item scale developed and validated by Lubatkin (2006) was used to capture the two orientations of the constructs. The six items measuring the explorative orientation of the organisations show the extent to which the organisation engaged in exploration activities in the last three years. These items are: (1) *Look for novel ideas by thinking "outside the box"; (2) Base its success on its ability to explore new technologies; (3) Create products that are innovative to the company; (4) Look for creative ways to satisfy its customers' needs; (5) Aggressively venture into new market segments; (6) Actively target new customer groups.* The other six items measuring the extent the organisation engaged in exploitation activities in the last three years include: (1) *Commit to improve product and service quality; (2) Continuously improve the reliability of its products; (3) Achieve a reduction in production cost due to increase in demand for its products and services; (4) Constantly survey existing customers' satisfaction; (5) Fine-tune what it offers to keep its current customers satisfied; (6) Penetrate more deeply into its existing customer base.* Both orientations were measured using a 5-point Likert scale ranging from 1 (*Not at all*) to 5 (*Very great extent*).

#### 3.4.2.4 Contextual Individual Ambidexterity (Managerial Level)

Manager's Ambidexterity level was measured by a fourteen-item scale developed and validated by Mom et al. (2009). Mom et al. (2009) and Mom et al. (2007) proposed a one-year timeframe when measuring managers' ambidexterity. The seven items measuring the explorative orientation of the managers focussed on their work related activities characterised as follows: *(1) Searching for new possibilities with respect to products, processes or markets; (2) Evaluating diverse options with respect to products, processes or markets; (3) Focusing on strong renewal of products or processes; (4) Activities of which the associated benefits to your organisation are currently unclear; (5) Activities requiring quite some adaptability of you; (6) Activities requiring you to learn new skills or knowledge; and (7) Activities that are not yet in company policy.* The other seven items measuring the exploitative orientation of the managers focussed on their work related activities characterised as follows: *(1) Activities of which a lot of experience has been accumulated by you; (2) Activities which you carry out as if it were routine; (3) Activities which serve existing customers with existing products; (4) Activities of which it is clear to you how to conduct them; (5) Activities which primarily focus on achieving short-term goals; (6)*

*Activities which you can properly conduct by using your present knowledge; and (7) Activities which clearly fit into existing company policy.*

#### 3.4.2.5 Customer Engagement

Customer Engagement is described as the level of a customer's physical, emotional and cognitive presence in their relationship with an organisation (Patterson et al., 2006). Capturing the depth of customer responses goes beyond focussing on the traditional measures of customer satisfaction (Bowden, 2009). Incomplete understanding of customers' relationship behaviours has adverse implications for customer relationship management (Wagar et al., 2012). Patterson et al. (2006) proposed Customer Engagement as a higher-order construct consisting four components: Vigour; Dedication; Absorption; and Interaction. Each of the components is defined as follows.

- Vigour: shows the level of energy and mental resilience by the customers while interacting with the employees, the organisation, the brand and other customers. Customers show the willingness to invest time and effort in their roles.
- Dedication: refers to the customers' sense of belonging. Customers are proud, keen and passionate about the organisation.
- Absorption: summarises the attributes of a fully concentrated, happy and deeply engrossed customers.
- Interaction: involves various connections between the customers and the organisations. These include: Customers-Front Line Employees; Customers-Organisation; Customer-Brand; and Customers-Customers interactions.

Fourteen items were identified from the issues discussed by the interviewers in the first phase of this research (qualitative phase). These items were considered suitable to quantitatively measure Customer Engagement based on the descriptions of Customer Engagement from the literature. Table 3.13 shows how these items relate to the Patterson's components of Customer Engagement (Patterson et al., 2006).

**Table 3.13: Customer Engagement Survey Items**

| | Issues discussed by the preliminary research informants | Patterson's Component |
|---|---|---|
| 1 | The company has an established relationship with the customers. | Interaction |
| 2 | The company fully understands the needs of the customers. | Interaction |
| 3 | There is an open invitation for constructive criticism from the customers. | Interaction, Dedication |
| 4 | The company often receives constructive criticisms from the customers. | Interaction, Dedication |
| 5 | The company follows clients' complaints through to a logical conclusion. | Interaction, Dedication |
| 6 | The company gets new customers via referral from current customers. | Vigour, Dedication, Absorption, Interaction |
| 7 | There are evidences that our customers discuss about our business activities with potential customers. | Vigour, Dedication, Absorption, Interaction |
| 8 | The management often send messages and greetings to the customers. | Interaction |
| 9 | The company provides after sale supports for its customers. | Interaction |
| 10 | The company often requests for customer feedback. | Interaction |
| 11 | The company receives solicited feedback from the customers. | Vigour, Interaction, Dedication |
| 12 | The company receives unsolicited feedback from the customers. | Vigour, Dedication, Interaction |
| 13 | The company meets with the customers to determine their future needs. | Vigour, Dedication, Absorption, Interaction |
| 14* | It has been long since we had one-on-one discussion with our key customers. | Interaction |

* Item is reversed in the scale during data analysis

### 3.4.2.6 Organisational Performance

Organisational Performance is a dependent variable measured with six items. The questions about Organisational Performance are asked employing a five-point Likert scale to determine the extent to which the managers are satisfied with six Organisational Performance measures. Table 3.14 shows these items and their corresponding sources.

**Table 3.14: Organisational Performance Survey Items**

| | Items | Adapted from |
|---|---|---|
| 1 | Sales Performance | Lin and Che (2007), Menguc and Auh (2010), Gunday et al. (2011) |
| 2 | Growth rate of sales | He and Wong (2004), Lubatkin et al. (2006), Lin and Che (2007), Menguc and Auh (2010), Gunday et al. (2011) |
| 3 | Achievement of sales target set | Calantone et al. (2002), Menguc and Auh (2010), Gunday et al. (2011) |
| 4 | Return on Investment | Calantone et al. (2002), Lubatkin et al. (2006) |
| 5 | Growth of net profit over the last three years | Menguc and Auh (2010), |
| 6 | Overall Profitability | Menguc and Auh (2010), Calantone et al. (2002), Gunday et al. (2011) |

These measures are subjective and bring in manager bias, but they are widely used in empirical research (Gunday et al., 2011; Khazanchi et al., 1989). According to Boyer et al. (1997) and Ward and Duray (2000), such subjective measures are utilised because:

- Many organisations are reluctant to disclose exact performance records.
- Managers and business owners are not willing to share objective performance data.

### 3.4.2.7 Background information

Background information includes individual level variables. Some of these variables are control variables because they sometimes influence individual responses to some of the dependent and independent variables. Findings from the literature reveal that managers' working experience may influence their ambidexterity (Mom et al., 2009; Tushman and O'Reilly, 1996). In order to control the influence of the manager's experience and level of education on ambidexterity, the following items are included in the managerial survey: manager's age; previous working experience; present working experience within the current organisation; and academic and professional qualifications. This is in line with previous studies on ambidexterity (Mom et al. 2009). All these measures are expected to positively correlate to the Contextual Individual Ambidexterity of the managers (Tushman and O'Reilly, 1996). Both the cover letter and the entire managerial questionnaire are placed in Appendix E.

### 3.4.3 Non-managerial Staff Survey

Both the cover letter and the entire questionnaire for the shop floor employees are placed in Appendix F.

#### 3.4.3.1 Organisational Context

Appropriate organisational context has been identified to be a necessary prerequisite for innovations; the organisation provides the context, the employees develop and carry out the innovations (Lin and McDonough, 2011). In non-managerial questionnaire, four independent variables measuring the organisational context are: Organic structure; Clan Culture; Adhocracy Culture; and Knowledge Sharing Culture. These constructs have been identified in the literature to relate to innovations and ambidexterity. For example, an organisational context that promotes knowledge sharing, trust, mutual respect and openness among the employees is likely to enhance the exploitation of existing competences and the exploration of new capabilities (O'Reilly et al., 1991; Cheng et al. 2008).

***Organisational structure***

Drawing on the previous research (Su et al. 2011; Martínez-León and Martínez-García, 2011; Slevin and Covin, 1997; Olson et al., 1995), Organic Structure was measured by eight items on a five-point Likert scale. The employees were asked to indicate a response that best represents the extent to which they agree, or otherwise, to each of the following items:

1. Encourages open channels of communication between the staff and the management.
2. Promotes information sharing among the employees.
3. Allows me to apply my initiatives as circumstances demand.
4. Encourages making the best decisions even if it requires bypassing formal rules temporarily.
5. Ensures employees stick to formally laid down procedures [*].
6. Encourages employee participation in the decision making process.
7. Sticks firmly to its past methods of operations [*].
8. Encourages operating styles that range freely from the very formal to the very informal.

*([*] Item is reversed in the scale during data analysis)*

***Clan and Adhocracy Cultures***

Both of these two independent variables were adapted from Cameron and Quinn (2006). The employees were asked to indicate a response that best indicates the extent to which they agree, or otherwise, to the items on a five-point Likert scale. As shown in Table 3.15, Clan and Adhocracy Cultures consist of five and six items respectively.

**Table 3.15: Clan and Adhocracy Cultures Items**

| | Clan Culture Items | Adhocracy Culture Items |
|---|---|---|
| 1 | My company is like an extended family where I feel free to discuss my personal issues. | The company is a very creative place to work. |
| 2 | I see my leader as a mentor. | The leadership in this company encourages learning new things. |
| 3 | The company encourages the employees to work as a team. | The leadership in this company encourages doing things that lack immediate benefits. |
| 4 | Group loyalty holds this company together. | The management style in the company is characterised by individual risk taking. |
| 5 | There is a strong concern for employee growth and development in this company. | Commitment to creativity holds this company together. |
| 6 | | Emphasis is on producing unique and new products. |

***Knowledge Sharing Culture***

Survey measure of Knowledge Sharing Culture was adapted from O'Reilly et al. (1991) and Lin and McDonough (2011). This construct consists of four items asking the employees to rate the extent of agreement, or otherwise, to each of the items on a five-point Likert scale where *1 represents Strongly Disagree; 2 represents Disagree; 3 represents Neutral; 4 represents Agree; and 5 represents Strongly Agree*. The items include: (1) *Knowledge is widely shared in this company; (2) This company emphasises openness among the employees; (3) Mutual trust is very important in this company; and (4) Respect among the employees is very important in this company.*

### 3.4.3.2 Employee Engagement

The survey items for Employee Engagement level were adapted from Vance (2006) and Lockwood (2007), as shown in Table 3.16. Employees were asked to indicate the response that best represents their extent of agreement, or disagreement, for each of the statements on a five-point Likert scale.

**Table 3.16: Employee Engagement Survey Items**

| | Items | Adapted from |
|---|---|---|
| 1 | I am personally proud of my company. | 1, 2 |
| 2* | I am not totally satisfied with every activity in my company. | 1, 2 |
| 3 | I am satisfied with every activity that relates to my job. | 1, 2 |
| 4 | I have the opportunity to perform well at my work. | 1, 2 |
| 5* | I do not always receive praise and positive feedback for my contributions. | 1, 2 |
| 6* | I do not have enough personal support from my supervisor. | 1, 2 |
| 7 | My effort is always far above and beyond the minimum. | 1, 2 |
| 8 | I understand the links between my job and the company's goals. | 1, 2 |
| 9 | My prospect for future growth with this company is high. | 1, 2 |
| 10* | I do not have any intention to stay with this company for long time. | 1, 2 |
| 11* | Sometimes I think of other things when doing my job. | 2 |
| 12 | Sometimes I am so engrossed by job that I lose track of time. | 2 |

* Item is reversed in the scale during data analysis
(1 = Vance, 2006; 2 = Lockwood, 2007)

### 3.4.3.3 Contextual Individual Ambidexterity

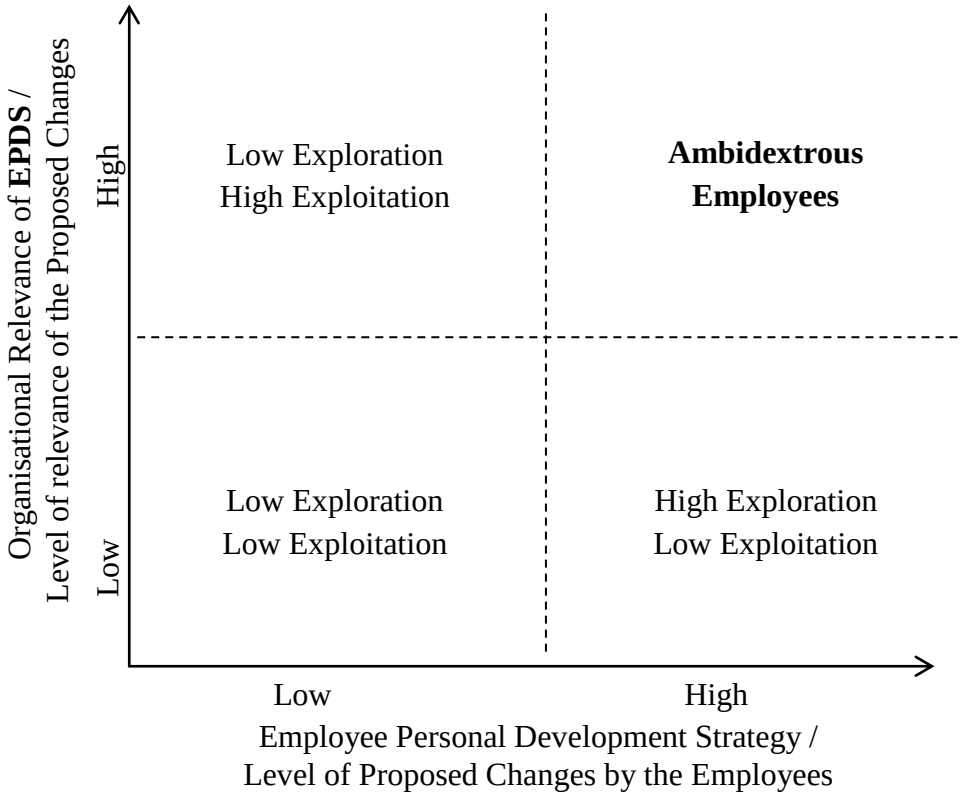
Many of the previous studies on ambidexterity focused on managerial level and organisational level ambidexterity. It was difficult to find survey items for shop-floor employee's ambidexterity at individual level. However, existing research studies on shop floor employee innovation, organisational and managerial ambidexterity, provide a sound basis for developing one. At manager's level, ambidexterity-related constructs were measured using a timeframe of one year. Therefore, a similar timeframe was applied for the CIA of the shop floor employees. Being a relatively under-explored area, and in order to accurately capture employee ambidexterity, two dimensions were proposed: CIA (Suggestion-Implementation Orientation) and CIA (Employee Personal Development Strategy-its Organisational Relevance Orientation).

Going by the definitions of ambidexterity, exploration orientation will focus on the ability of the shop floor employees to identify and suggest changes that may affect crucial aspects of their organisation. On the other hand, exploitation orientation will focus on the relevance of such proposed changes, and perhaps, their implementations within the activities of the organisation. Five of the themes employed to measure shop floor employee innovation by Axtell et al. (2000) were adapted to measure the

Suggestion-Implementation Orientation of CIA of the Shop Floor Employees. These items include: *New targets or objectives; New working methods or techniques; New products or product improvements; New methods to achieve work targets; and New information to any aspect of your work.*

Employee Personal Development Strategy (EPDS) and its Organisational Relevance Orientations for the shop floor employees were measured by four main questions, each with four different parts. The first two parts were designed to measure the exploration orientation while the last two parts were designed to measure the exploitation orientation. Part C of Appendix F shows the details of the questions and the follow-up questions. As shown in Figure 3.9, employees who show both high level of proposed changes or personal development strategy and high level of organisational relevance or implementation for those changes are said to be ambidextrous.

**Figure 3.8: Employees' Ambidexterity: Exploration and Exploitation Orientations**




While Employee Personal Development Strategy and/or level of Proposed Changes by the Employees constitute explorative activities, Organisational Relevance of those proposed changes constitute exploitative activities.

#### 3.4.3.4 Background Information

Shop floor employees' age, working experience and qualifications are also included in the non-managerial survey in order to investigate their influence on employees' CIA.

### 3.5 Pretesting the Survey Instrument

According to Saunders et al. (2007), it is important to pilot-test the research questionnaires in order to achieve the following objectives:

- To ensure that the respondents find it easy to fill the questionnaires.
- To allow preliminary assessment of the validity of the scale.
- To allow preliminary assessment of the reliability of the data to be collected from the field.
- To eliminate any possible difficulties during data collation by the researcher.

The first drafts of the questionnaires were sent to the research supervisor for comments and recommendations. Based on the recommendations received from the supervisor, a number of changes were made to the questionnaires. These include: among other things, changes on the structural arrangement of the questionnaires; removal and addition of items; double-barrelled questions were separated into two different questions; and some questions were carefully reworded. Once the corrections to the first draft were completed, copies were distributed to selected research students and staff at Loughborough University in order to evaluate the questionnaires with respect to their length, content, structure and format. A number of changes were implemented based on the suggestions and comments received.

On receiving the final satisfactory comments, and after securing the needed approval from the research supervisor, the online versions of the questionnaires were sent out to friends working in SMEs via Bristol Online Surveys (http://survey.bris.ac.uk/). This pilot test was carried out between May and June 2012. This was meant to assess the reliability analysis for the scales used in the questionnaires and to obtain other useful comments to improve the questionnaires. The analyses assessed the internal consistency estimate (Cronbach's alpha) of the items measuring the same constructs. The items measuring the same construct within a scale should all be fairly correlated with each other (Brace et al., 2006). Cronbach's alpha of 0.70 or more is generally accepted and represents good validity (Litwin, 1995).

52 respondents participated in the pilot testing of the questionnaires. In addition to answering the items in the questionnaires, some of the respondents also gave their valuable feedback based on the request made at the end of the questionnaires. Based on the reliability analyses and the feedback received, the questionnaires were modified. The modifications included adding, deleting and restructuring some of the items. Table 3.17 and Table 3.18 show the corresponding Cronbach's alpha (α) for each of the final research constructs for managerial and non-managerial questionnaires respectively.

**Table 3.17: Pretesting the Managerial Staff Survey Instrument (Cronbach's alpha, α, for the Research Constructs)**

| | Constructs | α | α* |
|---|---|---|---|
| 1 | Organisational Innovation | 0.726 | 0.738 |
| 2 | Marketing Innovation | 0.843 | 0.842 |
| 3 | Organisational Ambidexterity (Exploration Capability) | 0.755 | 0.761 |
| 4 | Organisational Ambidexterity (Exploitation Capability) | 0.805 | 0.839 |
| 5 | Manager's Ambidexterity (Exploration Capability) | 0.738 | 0.706 |
| 6 | Manager's Ambidexterity (Exploitation Capability) | 0.741 | 0.742 |
| 7 | Customer Engagement | 0.809 | 0.839 |
| 8 | Organisational performance | 0.948 | 0.956 |

* Cronbach's Alpha based on standardised items

**Table 3.18: Pretesting the Shop Floor Employees Survey Instrument (Cronbach's alpha, α, for the Research Constructs)**

| | Constructs | α | α* |
|---|---|---|---|
| 1 | Organic Structure | 0.732 | 0.729 |
| 2 | Clan Culture | 0.787 | 0.804 |
| 3 | Adhocracy Culture | 0.882 | 0.886 |
| 4 | Knowledge Sharing Culture | 0.835 | 0.837 |
| 5 | Shop Floor Employee Level of Engagement | 0.852 | 0.849 |
| 6 | CIA (Suggestion-Implementation Orientation) –Exploration | 0.910 | 0.912 |
| 7 | CIA (Suggestion-Implementation Orientation) – Exploitation | 0.891 | 0.891 |
| 8 | CIA (Employee Personal Development Strategy and its Organisational Relevance) – Exploration | 0.724 | 0.729 |
| 9 | CIA (Employee Personal Development Strategy and its Organisational Relevance) – Exploitation | 0.864 | 0.867 |
| 10 | Combined CIA –Exploration | 0.714 | 0.741 |
| 11 | Combined CIA- Exploitation | 0.848 | 0.854 |

* Cronbach's Alpha based on standardised items

Each α exceeds the minimum acceptable level of reliability for each of the constructs. Appendices G and H show the detailed results of the reliability analyses for the constructs in Managerial and Shop Floor Employee questionnaires respectively.

### 3.6 Ethical Issues

A researcher needs to address two major issues before designing a study: the relationship between the past studies and the proposed study, and the second major concern is the ethical-moral dimension (Neuman, 2011). The first issue has been addressed in the previous chapters. Researchers need to prepare and consider ethical concerns as they design their studies in order to incorporate sound ethical practice into their research; these include, among other things: the concerns; the dilemmas; and the conflicts that arise over the proper way to conduct research (Neuman, 2011). Many of these ethical issues require the researchers to balance the pursuit of scientific knowledge with the rights of the research's informants or of others in the society (Neuman, 2011). With respect to the research participants and their immediate environment, unethical behaviours in social research can be summarised into four main activities, as shown in Table 3.19.

**Table 3.19: Group of Unethical Activities in Social Research**

| | Activities | Description |
|---|---|---|
| **1** | Lack of Informed Consent | The researcher unethically acts as a covert observer. The researcher fails to present consent statements to the informants |
| **2** | Harm to the Research Participants and to those in their immediate Environment | This arises from the researcher's actions that could cause physical harm, psychological abuse, legal risk, economic or career risk to the participants and those in their immediate environment. |
| **3** | Invasion of Privacy | Researchers should be aware of the right of the participants to privacy. It is important to note that participants' agreement to participate in the study is not a provision for an illegal invasion of their privacy. |
| **4** | Deception | Occurs when the participants do not know the purpose of the study or when they are deceived about the purpose; the design of the research; about the role of the other participants; or how the data will be used |

Adapted from Bryman and Bell (2007)

The details of the study; the individuals involved; and the institution involved, were made known to each of the participating organisations through their gatekeepers via the research introductory pack (see Appendix A). Both the qualitative phase and quantitative phase were conducted in compliance with required ethical conduct and guidelines; the researcher ensured that there was:

- No violation of the research conduct, rules and procedures;

- ❖ No violation of participants' rights, no physical harm, no psychological abuse, no legal risk, no economic or career risk; and
- ❖ No breach of data confidentiality and personal privacy.

### 3.7 Summary of Chapter

This chapter described an extensive account of the methodological approach to address the research problems and questions. It provides a brief description of the philosophical assumptions and of the different World Views. The chapter further examined various research methodology approaches, analysed the research problems, questions and hypotheses for the current research to propose a suitable research methodology. The mixed methods research methodology was selected, the reasons for this selection and its suitability for the current research were also presented in this chapter. The chapter also contained the steps involved in the explorative and analytical phases of the study. The stages involved in the design and pilot-testing of the research questionnaires were also discussed. The ethical-moral dimension of the research was presented as well. Chapter 4 focussed on the exploratory phase of the study.

# Chapter 4

## 4 Qualitative Research Phase

As revealed in section 3.3, there is a need for an exploratory study when very little is known about the areas of investigation. The nature of the research problems and questions, described in section 3.3.1, demands an exploratory research in order to provide comprehensive insights and facets to the identified constructs. The main activities discussed in this chapter include: establish contact with gatekeepers; arrange the interview dates; collect interview data; prepare data for analysis; analyse data; identify emerging themes; and interpret the emerging themes. These are steps taken during the exploratory phase of this study, and the corresponding outcomes are discussed in details in this chapter.

In order to gain a broad understanding of the informants' perceptions of both the organisational and the marketing innovations within their companies, open-ended questions were used for the interview. With respect to the organisational innovations, interview questions were geared towards understanding the strategic changes in the organisations within the last three years. In section 2.8.3, such strategic changes have been shown to result in significant improvement in the organisational structures, business practices, workplace arrangement, processes, or external relations with suppliers or customers (Teece, 2008; DTI, 2006; Wang et al., 2009). With regard to marketing innovation capability, interview questions were designed to determine what factors initiate and promote significant changes in the product marketing methods, product design and packaging, product promotion and pricing.

Findings from the literature (section 2.16) reveal the crucial roles of organisational context in promoting organisational innovativeness; developing organisational ambidexterity; and improving organisational performance. It is important to note that cultural issues often act as barriers for small and medium-sized organisations' interactions with external partners (van de Vrande et al., 2009). Suitable organisational context provides a conducive organisational environment for innovations (Lin and McDonough, 2011). Findings from O'Regan et al. (2006) reveal that appropriate organisational culture is crucial to fast track effective innovation in SMEs.

Going by Hofstede's description of national culture, Nigeria has a high Power Distance Index (PDI), score of 80, against the United Kingdom's score of 35. This implies that people accept a hierarchical order and centralisation is dominant in Nigeria (Hofstede et al., 2010; Hofstede, 2001). Therefore, hierarchical organisational context is likely to be the dominant in Nigeria. However, since national culture cannot be assumed to be the same as the organisational culture, a quick and general cultural assessment of the selected cases was deemed necessary. The Organisational Culture Assessment Instrument (Cameron and Quinn, 2006) was used for this purpose being a well validated instrument for measuring organisational culture.

### 4.1 Background to the Process

The researcher established initial contact with twenty companies via emails and phone calls. This phase of the study was quite challenging as the companies were not, initially, willing to communicate with an "unknown person" via the phone and/or email. No initial response was received from the companies until a soft copy of the research introductory pack (see Appendix A) was sent to each company, and the researcher promised to come along with the hard copies on the interview day.

Following arrival in Nigeria, the first task was to submit the hard copy of the introductory pack. This was done on different days, depending on the location of each of the companies. As the researcher had only established contact with some of the companies through their websites, the company "gatekeepers" were, initially, reluctant to give their full support to the study; that was until a brief profile of the researcher, published by one of the Nigerian national dailies, The Tribune (see Appendix B), was submitted to them.

Fifteen of the twenty companies mentioned earlier were contacted to arrange interviews. For the companies A, F, K and L, interview dates were prearranged via prior phone calls. Of the fifteen companies contacted, only twelve met the criteria for the research study. Table 4.1 shows the establishment date and total number of employees for each of these companies, the detailed profiles of which are presented in Appendix C.

**Table 4.1: Establishment Date and Company Size**

| Company | Number of Employees | Category | Establishment Year |
|---|---|---|---|
| **A** | 19 | Small | 2005 |
| **B** | 55 | Small | 1980 |
| **C** | 50 | Small | 1990 |
| **D** | 32 | Small | 1988 |
| **E** | 14 | Small | 1994 |
| **F** | 26 | Small | 1991 |
| **G** | 80 | Small | 1988 |
| **H** | 75 | Small | 2009 |
| **I** | 96 | Small | 1972 |
| **J** | 35 | Small | 2009 |
| **K** | 240 | Medium | 1988 |
| **L** | 100 | Medium | 2006 |

Company E has the lowest number of employees while Company K has the highest number of employees. All the companies are in the category of small and medium-sized organisations. Table 4.2 gives the sequence of events for the study's interviews.

**Table 4.2: Sequence of events for the study interviews**

| No | *CC | Location (State) | Events | Date (2011) |
|---|---|---|---|---|
| 1 | A | Lagos | Submission of Introduction pack (Hard copy) and Interview | 13/09 |
| 2 | B | Lagos | Submission of Introduction Pack and fixing the interview date and time | 13/09 |
| 3 | C | Lagos | Submission of Introduction Pack and fixing the interview date and time | 13/09 |
| 4 | D | Lagos | Submission of Introduction Pack and fixing the interview date and time | 13/09 |
| 5 | B | Lagos | Interview | 14/09 |
| 6 | C | Lagos | Interview | 14/09 |
| 7 | D | Lagos | Interview | 14/09 |
| 8 | E | Lagos | Submission of Introduction Pack and fixing the interview date and time | 15/09 |
| 9 | E | Lagos | Interview | 16/09 |
| 10 | F | Osun | Submission of Introduction pack (Hard copy) and Interview | 19/09 |
| 11 | G | Osun | Submission of Introduction Pack and fixing the interview date and time | 19/09 |
| 12 | G | Osun | Interview | 20/09 |
| 13 | H | Ogun | Submission of Introduction Pack and fixing the interview date and time | 21/09 |
| 14 | J | Ogun | Submission of Introduction Pack and fixing the interview date and time | 21/09 |
| 15 | I | Ogun | Submission of Introduction pack (Hard copy) and Interview | 22/09 |
| 16 | H | Ogun | Interview | 22/09 |
| 17 | J | Ogun | Interview | 22/09 |
| 18 | K | Lagos | Submission of Introduction pack (Hard copy) and Interview | 22/09 |
| 19 | L | Lagos | Submission of Introduction pack (Hard copy) and Interview | 23/09 |

*CC: Company Code

The main three events for the interview process were: submission of research introduction pack; fixing of interview date, time and venue; and the interview.

### 4.2 The Interviews

This phase of the study involves an in-depth exploratory qualitative study of thirteen individuals who are either the owners or who occupy a managerial position in one of the twelve companies detailed in Table 4.1. MacCracken (1988) recommends a minimum of eight interviews to establish common themes, thus the 13 interviewees detailed in Table 4.3 are deemed more than adequate. Table 4.3 includes the occupational positions of each of the interviewees.

**Table 4.3: Interviewees' Occupational Positions (IOP)**

| Int. | Company | IOP | CC |
|---|---|---|---|
| 1 | Information and Communications Technology solutions provider. | Head of IT | A |
| 2 | Engineering company providing distribution and installation of manufactured and forged products made of wrought iron. | Marketing Manager | B |
| 3 | Food and beverage production company | Sales Manager | C |
| 4 | Engineering company into design, fabrication and installation of industrial signs. | Operations Manager | D |
| 5 | Electrical Engineering company | Head of Operations | E |
| 6 | Engineering company providing design, manufacture and installation of electrical and mechanical machines | Founder and Managing Director | F |
| 7 | Building and Construction materials manufacturer | Production Manager | G |
| 8 | Building and Construction materials manufacturer | Head of Marketing | G |
| 9 | Manufacturer of plastic goods and wares | Head of Account Department | H |
| 10 | Transformer manufacturing company | Head, Finance and Admin | I |
| 11 | Printing and packaging manufacturing company | Operations manager | J |
| 12 | Engineering company providing basic and detailed engineering, procurement, construction supervision and Project Management services | Health Safety and Environment engineer | K |
| 13 | Equipment Solutions and Logistics Services provider | Head of operations | L |

Before the interview, the researcher adhered strictly to the ethical guidelines and considerations by assuring each of the interviewees that any information obtained would be solely used for the research study and that their responses would be anonymised as discussed under the research ethical issues in section 3.6. The researcher also sought each individual's permission to audio record the interview and this was granted by all the interviewees. Each interview lasted between 45 minutes

and one hour, and was digitally recorded to ensure accurate capture of the interview. The interview guide for the study is placed in Appendix D.

## 4.3 Content Analysis

The interviews were transcribed and content analysis performed (Silverman, 2000), to identify any emerging themes, according to the steps enumerated in Creswell (2009 p.185). Based on the suggestions of Gibbs (2007) and Creswell (2009), some of the main considerations to ensure validity of the study were incorporated as follows:

- Data transcription was carefully and patiently carried out to avoid mistakes;
- During the coding process, constant comparison was made of data with the emerging codes and themes to ensure that there was no drift in their definition;
- Each of the themes was established based on several informant sources. Evidence from different informants was examined to facilitate triangulation and a coherent justification for each of the themes.

## 4.4 Emerging Themes and Perspectives

The guidelines for collecting and interpreting innovation data identify three key areas that form the basis of organisational innovations: changes in business practices; workplace organisation; and firms' external relations (OECD/Eurostat, 2005). Also, the key areas that relate to marketing innovations include: changes in product design and packaging; changes in product promotion and placement; and changes in methods for pricing (OECD/Eurostat, 2005). These key areas guided the direction of discussion with the informants during the interview process, as shown in the interview guide (Appendix D).

### 4.4.1 Informants' Perspectives on Organisation Innovation Capability

Findings reveal the following as crucial components of the Organisational Innovation Construct: Continuous Learning Culture; Employee Training and Development; Sustainable Manufacturing Instinct and Benefit; Effective Workplace Communication; and Employees Empowerment and Participation. Excerpts from interviews were included at relevant points in subsequent sections in support of the emerging themes.

#### 4.4.1.1 Continuous Learning Culture

Responses on the issues that affect the organisational ability to implement new organisational methods in their business practices, workplace organisation or external

relations reveal that employees should be trainable and always ready to learn. The need for continuous learning among the employees was emphasised, to support this:

> "Learning is taken as a never-ending process…there is a culture of never-ending education. Employees are encouraged to learn new things and share with others…we have to find newer ways of doing things constantly, if not, the company goes out of the business or becomes a back bencher. Constant learning is the demand of the industry…as long as we want to be ahead, we have to learn new things or create new things for other people to learn from." (Int. 1)

> "We have to think about the future and we don't like being caught unaware. We are not satisfied with where we are now…doing everything possible to achieve excellent status." (Int. 6)

> "We do a lot of research, if there is any emerging issue; we research about it so that we are able to have a firm knowledge about it. The company encourages people to attend seminars and pay for such seminars so that employees can update their knowledge." (Int. 13)

#### 4.4.1.2 Employee Training and Development

There was evidence of employee training and development in support of the organisational ability to implement new organisational methods in their business practices, workplace organisation or external relations. Some of the issues raised include in-house knowledge transfer, on the job training, accessing external knowledge, staff seminars and training, and measures for appraising staff performance after training:

> "Before we implement anything, we try to simulate the scenario before the actual implementation…again training and motivation are provided to the staff to make sure they are up to the task." (Int. 1)

> "We have been able to work on our human resources…top level management members have been attending different training courses to improve the quality of our work force. We entered into partnership with a firm in Italy, this is 5 years old now, and this promotes our access to external knowledge and raw materials. Our desire to become better encourages us to learn every day. Employees are briefed and trained of any impending changes…we make sure that they have perfect knowledge of any changes. We always do research about finding ways to enter the new markets…about finding efficient and effective ways to reach our final consumers. We are improving our

information search and research so that we can develop products that meet world standards and globally acceptable." (Int. 2)

"We employ the people we can train. …we need to transfer knowledge about the jobs to them. The mind-set of the employees is proportional to what you get from them…We invite specialists for our training so that we can upgrade ourselves with relevant knowledge…There are ways the management is planning for us, making us aware of the latest technology; they invite people to teach us in different ways, such as seminars." (Int. 11)

"Occasionally, members of some professional bodies in the industry are invited by our Managing Director to give us lectures, we ask them questions and also ask for their professional advice on issues affecting us." (Int. 7)

"When we train our staff, they become more functional and more reliable." (Int. 3)

"We have regular training especially for the production staff and in all areas as well." (Int. 9)

"We attend seminars. Knowledge is limitless; we continue to learn to acquire more. We try as much as possible to keep abreast with new discoveries in our industry. We send employees out for training and also bring facilitators to the companies to train us." (Int. 5)

"I do attend exhibitions and when I come back, skills and knowledge gained are passed to our staff. We do update ourselves through series of programmes, conferences and convention and learn a lot to inject into our system." (Int. 6)

"In order to enhance our competitive advantage, staff training is being provided by our international technical partner from time to time." (Int. 10)

"…we have class room training, formal training, the company also hires expatriates as necessary who will work on the jobs and ensure that members of staff learn under them…" (Int. 12)

#### 4.4.1.3 Effective Workplace Communication

Another prominent issue raised by some of the informants is the need for an excellent workplace internal communication structure in the implementation of any new organisational methods in their business practices, workplace organisation or external relations. Employees are to be listened to and recommendations from them are to be

encouraged. With regard to information exchange, the manager should not hide any information needed by the employees to effectively carry out their responsibilities:

> "There are constant meetings and seminars to get the necessary update about the industry. The management members hold meeting once in a week and a general meeting with the employees once in a month." (Int. 11)

> "Management and the employees have good rapport. The management and the employees talk at length and we also have regular meetings to address issues them affecting the staff and the company." (Int. 7)

> "We discovered that for the company to move forward and for production to be effective, we need to be communicating very well with every member of staff. We have also successfully bridged the communication gap between the top level and middle level managers. Employees are free to discuss any aspect of the business with the management …We listen to every suggestion by staff." (Int. 2)

> "There is free flow of information, especially the most important one for the employees." (Int. 13)

> "From time to time, they will be alignment meetings. At the start of the project, they will be kick-off meeting. So, in these meetings, we keep asking questions, we keep submitting our works for review. That is the way we ensure that we do exactly what we have to do. If we make a mistake, it is not a big deal as long as the job is not yet delivered." (Int. 12)

#### 4.4.1.4 Employees' Empowerment and Participation

Some of the informants considered *empowering the employees* to be of the utmost importance to organisational innovation, such that their opinions could be welcomed, trusted and valued in the decision making process. Some opined that *employee sense of belonging*, *team work* and *getting feedback from the employees* would promote the creation of a well-informed employee community. Such a community is a prerequisite for the implementation of a successful and fruitful organisational change:

> "If we are introducing any changes, all the members of staff, the old and the new ones, are involved. All members are carried along. We provide training that relate to the changes…Training allow our employees to work with minimum supervision, for example some of them are in the field doing the jobs perfectly with no one guiding them…Whenever we have tasks to execute I call on my subordinates,

the workers; we study the tasks together; everyone will contribute their ideas." (Int. 4)

"Because employees are well informed, there has been a decrease in the time it takes to design, fabricate and test new machines." (Int. 6)

"We discovered that the truck drivers are a key factor to our success…we are now seeing them as partners, though they are our employees, creating forums where we can come together, seek their opinions and address issues that affect them and the company." (Int. 13)

"We always encourage our staff to contribute ideas; anything they think can move the company forward." (Int. 2)

"Here we understand that the more your employees know their jobs and duties, the faster your products will get to the market because the senior members of staff need less time to supervise. We are able to delegate very well." (Int. 5)

Table 4.4 summarises the issues discussed by the informants and emerging perspectives on the Organisational Innovation Capability construct.

**Table 4.4: Organisational Innovation Capability**

| Issues discussed by the informants | Emerging Perspectives |
|---|---|
| Ensuring employees are trainable<br>Employees' Readiness to Learn<br>A Culture of never ending education<br>A culture of continuous learning<br>Employees' Mind-set to learning and training | Continuous Learning Culture (CLC) |
| In-house knowledge transfer<br>On the job training<br>Accessing external knowledge<br>Staff seminars and training<br>Staff Performance Appraisal | Employee Training and Development (ETD) |
| Good workplace internal communication<br>Management-Employee Communication<br>Freedom of Information<br>Management-Employees Meetings<br>Employees are aware of what it is required of them | Effective Workplace Communication (EWC) |
| Team working<br>Employees' Feedback<br>Employee Sense of Belonging<br>Making employees to be part of the business<br>Employees are not left behind in the change process<br>Recommendations and opinions are welcomed and valued from the employees | Employee Empowerment, and Participation (EEP) |

### 4.4.2 Informants' Perspectives on Marketing Innovation Capability

The excerpts from the interviews revealed that Customer Relationship Management, Customer Satisfaction, Referral Marketing and Customer Partnering are some of the constructs identified to be crucial for the marketing innovation construct.

#### 4.4.2.1 Customer Relationship Management

Responses on the ability of the selected firms to introduce significant changes in the product appearance, product design or packaging, product placement, product promotion or pricing, or even new marketing concepts, revealed that companies need strategic measures to manage their interactions with customers. For a company to address its customer needs better, *cordial relationships with the customers* and *understanding their needs* were noted to be crucial:

> "We have database for our customers, we have their contacts, we relate on one-on-one basis to identify their needs." (Int. 9)

> "We are building a strong relationship with our customers …occasionally we invite them, we hold meeting with them and we host seminars with them. During the seminars, we share our views, so that our relationship is more strengthened. We build a strong relationship with our clients to make us more united." (Int. 11)

> "As a company, we build personal relationship with our customers…We established relationship with our customers…Sometimes we visit, we send gifts to them, birthday messages and anniversary messages…We also keep our customers' interests in our minds. We make our customers to be in control because it is what they want we are giving to them… Also from the details they provided, there are certain things that show that interested in some things and when that things come up, we get in touch with them. There is software program they call data mining, through which we are able to get certain information. If we notice that our customers are interested in certain thing, we tailor our products to such. If we notice that they are not interested in certain things, we move away from such. We get those things from their data." (Int. 1)

> "Most of our employees are well known outside the company…they interact well with some of our customers, and projecting the good image of the company … and this makes our customers to develop more interest in what we do." (Int. 8)

"There are occasions when our customers come to request for customised productions, we do that. It is a really flexible approach to satisfy our customers. When they make their requests, we offer suggestions on how we can make their requests better and in many occasions, they listen to us because they believe in us and our suggestions…we start production based on the final agreement between the company and the customers." (Int. 3)

"When the clients bring their jobs, they tell us what they want and we put it together. At different stages of the design work, the clients come in to check to be sure that what we are doing is what they want. Anywhere they notice a deviation, they highlight it and they put note so that we can readjust it back to what they want… the quality engineer will ensure that all recommendations of the clients are put into the final design." (Int.12)

#### 4.4.2.2 Customer Satisfaction

Some of the informants are of the opinion that meeting or exceeding customer expectations and requirements is a crucial component to the development of new marketing methods. Examples of new methods introduced include: customer feedback; customer complaint management; and defensive marketing strategy. According to one of the informants, there is a provision for open invitation for constructive criticism for the current and potential customers. Customer complaint management is an attempt to ensure that client's complaints are followed through to a logical conclusion. A defensive marketing strategy only works for satisfied customers; this allows the companies to continue keeping their old customers:

"We have customer feedback forms. …customer satisfaction form allows us to obtain responses from them. Quality control department that looks into customer responses and feedback…We work on customer responses and feedback to ensure improvement in our activities. Based on their responses, we know what to do to ensure that they remain loyal to the company…" (Int. 9)

"There is a room for criticism from the customers…this creates room for improvement for the company." (Int. 6)

"We manufacture to the taste of the customers and the final approval comes from them." (Int. 4)

"We have better interface that we use to communicate with our clients… we address and follow clients complaints through to a logical conclusion… making sure that the issues are resolved…We encourage our customers to give feedback; we go extra mile to solve their problems and that there is an improvement." (Int. 1)

"Occasionally, we contact them to ascertain that our products are what they requested for and are meeting their needs…We make sure that we know what our customers want so that we can give them what they want." (Int. 11)

"The company has good relationship with our customers…If we cannot meet the customer's demands with respect to the delivery time because of other commitments, we communicate with the customer." (Int. 8)

"We have a quality control unit that ensures that all our products meet all the parameters…We are careful about our product packaging so that we don't put our customers off". (Int. 3)

"It is not only about profit, customer satisfaction is essential to our activities and operations…" (Int.5)

"To make sure that our customers are satisfied with our products, we provide warranty for our services and products." (Int. 10)

"…our operations are usually driven by the clients' requirements…quality management is about customer satisfaction. As long as there is customers' satisfaction, we are sure that they will come back again. The only other thing probably is that we drive down our cost as low as possible" (Int. 12)

#### 4.4.2.3 Referral Marketing

Some informants also revealed that in an attempt to improve their marketing innovation capability, companies maximised their current customers' ability to introduce activities of the companies to new customers. Responses revealed that some of the companies benefited from introductions to new customers via their existing customers:

"We enjoy more introductions to new customers from our old customers…our customers introduce us to new and potential customers." (Int. 8)

> "Word of mouth from our customers has made us to have more demand for our products and services." (Int. 6)
>
> "It starts with better service, then more customers because of word of mouth from our customers, then increase in production, because we have more demand. Then expansion due to increase in production that is what I have observed." (Int. 1)
>
> "We distribute gifts annually to our customers. Through this kind gesture, they introduce new customers to the company…potential customers get to know us through our customers." (Int. 5)

#### 4.4.2.4 Customer Partnering

Another prominent issue that emerged from the interviews is that some of the selected companies are keen to directly engage their customers in their business activities. Enabling the customers to have a voice in the activities of the company is crucial in meeting customer needs and in successful implementation of new marketing methods for their products and services. Customer partnering goes beyond putting customers first; the organisations aim to connect their business activities with their old and new customers on a continuous basis:

> "We treat our customers as partners in business; this gives us an added advantage." (Int. 9)
>
> "Information comes from those resellers; they are our partners. It is three sided, the staff, the customers and the partners, those are the people bringing insights to what we should do." (Int. 1)
>
> "So we are seeing our customers as partners, and from time to time, we meet with them. We put some ideas before them on how they can do better and how we can serve them better and they also serve us better, so that the operations can go smoothly." (Int. 13)
>
> "We provides seminars for our customers to know how to more about our products, particularly how to effectively use them." (Int. 6)

With respect to the Marketing Innovation Construct, Table 4.5 shows the summary of the issues discussed and the emerging perspectives.

**Table 4.5: Marketing Innovation Capability**

| Issues discussed by the informants | Emerging Perspectives |
|---|---|
| Establishing cordial relationship with customers<br>Understanding the needs of the customers<br>Products are according to customers specifications<br>Customised production based on the request of the customers from time to time | Customer Relationship Management (CRM) |
| Customer Feedback<br>Customer Complaint Management<br>Customer loyalty<br>Defensive Marketing Approach<br>Open Invitation for constructive criticism from the customers<br>Following clients complaints through to a logical conclusion | Customer Satisfaction (CS) |
| Getting the customers to talk about the business<br>Customer Referrals<br>Introductions to new customers from our old customers | Referral Marketing (RM) |
| Establishing and Maintaining Business Partnership with customers<br>Creating well informed Customers<br>Companies provide seminars for the customers<br>Customised greetings and messages to customers | Customer Partnering (CP) |

### 4.4.3 Other Emerging Perspectives

Findings reveal that the success of any new organisational change depends on the following:

- The level of employee commitment,
- Employee loyalty and intention to stay with the company after receiving training,

- Employee perseverance, and
- Organisational ability to exploit internal and external knowledge

#### 4.4.3.1 Employee Commitment, Loyalty and Perseverance

Some informants opined that emphasis should be placed *on employees' responsibilities* and their *commitment* to ensure the successful implementation of organisational changes within the business practices. According to one informant, staff performance appraisal would ensure that employees are doing the right things at the right time. Another informant identifies that the employees are fully aware that their behavioural attitude to responsibility affects both the company and every individual involved:

> "We place responsibility on the employees…Employees are also aware that any employee's behaviour that tarnishes company's reputation will also affect the employee in question, not just the company alone…Employees are encouraged to learn new things and share with others… We tell our friends about the company…everywhere we go we market our company." (Int. 1)

> "When the customer demands exceed our supply, members of staff are well informed and we will motivate the staff to add additional working hours to meet the demands of the customers on time… Most of our employees are well known outside the company…they interact well with some of our customers, and projecting the good image of the company." (Int. 7)

> "The management and the employees brainstorm, we have what we call strategic sections quarterly, where we come together and look at the various trends in the industry. After such brainstorming sections, we come out with decisions and steps; these form the basis of our policy." (Int. 13)

#### 4.4.3.2 Knowledge Exploitation

Responses from the majority of informants reveal that the organisation's capability to exploit knowledge from both internal and external sources promotes their ability to address their customer needs and their overall viability. Turning business talks into business actions and activities; constantly finding ways of pushing knowledge acquired during training into business practices; and building well informed

employees were noted to be some of the crucial components of organisational and marketing innovations capabilities:

> "Knowledge gained by our employees via training makes us more effective, more efficient and more productive…more financially and commercially viable. We have been able to increase our product sales through the creation of new markets for our products. Our products are becoming affordable for low income earners… The quality of our products has improved over the years after entering into partnership with a foreign firm. Now our products are of the same quality with what is obtainable in any country all over the world. We are able to deliver in all aspects: fast delivery, good quality products, high level of customer satisfaction and maintaining the standards our customers want." (Int. 2)

> "Experience of our staff has been helping us. Also, knowledge acquired in seminars and training is helping the workforce in handling challenges and solving problems with ease… productivity is also very high, we are able to do our work better." (Int. 13)

> "We used to spend a lot to take care of breakdowns in the past. After the training, we found out that has reduced. We introduced new packaging design into our products, some customers are finding this interesting…some are ordering for this new design despite the additional costs." (Int. 9)

> "Training allows our employees to work independently, for example some of them are in the field doing the jobs perfectly with no one guiding them." (Int. 4)

> "The system of our book keeping has been improved…the finishing, I mean with respect to our equipment fabrication, has been improved…our commitment to learning has made us understand which materials are suitable for different parts of the machines we manufacture. Our products are more durable and their market acceptability is high." (Int. 6)

> "Unlike before, our products are now characterised with good finishing and improved appearance." (Int. 11)

> "Quality management and improvement in the quality of deliverables reduces the need for rework, this saves time and cost." (Int. 12)

#### 4.4.3.3 Sustainable Manufacturing Instinct and Benefit

Interestingly, some of the informants revealed the impact of their organisational innovation through identification of reduction in the cost of carrying out business activities by minimising waste inherent in their processes. As identified in the Oslo Manual (OECD/Eurostat, 2005), organisational innovation can be towards reducing administrative costs or transaction cost:

> "We always look for ways of reducing the cost of doing business…reducing human requirement, money requirement and time requirement." (Int. 1)

> "We used to have a lot of waste. When the production operators came back from a recent training they attended, we notice that production increases, there is now less waste generated." (Int. 9)

> "Our understanding of what the metal scraps can be used for makes us to be generating income for the company." (Int. 7)

> "We discovered that most haulage companies in Nigeria do one dimensional journey, they take their goods to the customers and the trucks return back empty. So the time spent, fuel and equipment depreciation in coming back represent some form of waste…So we now re-strategized to make our operations 2-dimensional, in some cases 3-dimensional. We identified potential manufacturers in need of logistic services in our delivery locations." (Int. 13)

> "The training we give to our staff cannot be quantified but we can see the effect. For instance, we have continuous reduction in waste…" (Int. 3)

> "In term of saving costs, in term of environmental protection policy management, we have made changes. For environmental protection, we have cut down the consumption of paper, so we have moved to using email instead of printing Memo and the like." (Int. 12)

Table 4.6 summarises other perspectives that emerged from the issues discussed by the informants.

**Table 4.6: Other Perspectives Emerging from the Qualitative Study**

| Issues discussed by the informants | Emerging Perspectives |
|---|---|
| Staff Performance Appraisal<br>Employee Commitment<br>Employee Trustworthiness<br>Emphasis on Employee Responsibilities<br>Hard work and perseverance on the part of the employees<br>Active involvement of the employees in decision making process after receiving training<br>Employee readiness to stay and be part of any organisational change<br>Employee readiness to train other<br>Employee willingness to stay in the company after receiving training<br>Employee contribution to organisational goals | Employee Commitment, Loyalty and Perseverance (ECLP) |
| Turning business talks into business actions and activities<br>Constantly finding ways of pushing knowledge acquired during training into business practices<br>Building well informed employees<br>Effective use of organisational resources<br>Employee's contribution to new product development | Knowledge Exploitation (KE) |
| Efforts are made towards reducing waste generated in the production activities<br>Effort towards reducing human, money and time requirements in the production activities<br>Optimal use of production resources<br>Resource Management<br>Using innovative approach to reduce waste of intermediate and final products<br>Using innovative approach to get financial returns from some unavoidable waste products | Sustainable Manufacturing Instinct (SMI) & Sustainable Manufacturing Benefit (SMB) |

### 4.4.4 Emerging Themes and Identified Antecedents to Organisational and Marketing Innovations Capabilities

Table 4.4 and Table 4.5 summarised the emerging perspectives from issues discussed by the informants with respect to Organisational and Marketing Innovations capabilities (soft components of innovation). Figure 4.1 summarised the emerging themes and the identified antecedents to these two soft components of innovation. Figure 4.2 summarised other emerging perspectives and themes from the qualitative study.

**Figure 4.1: Identified Antecedents to Organisational and Marketing Innovations Capabilities**

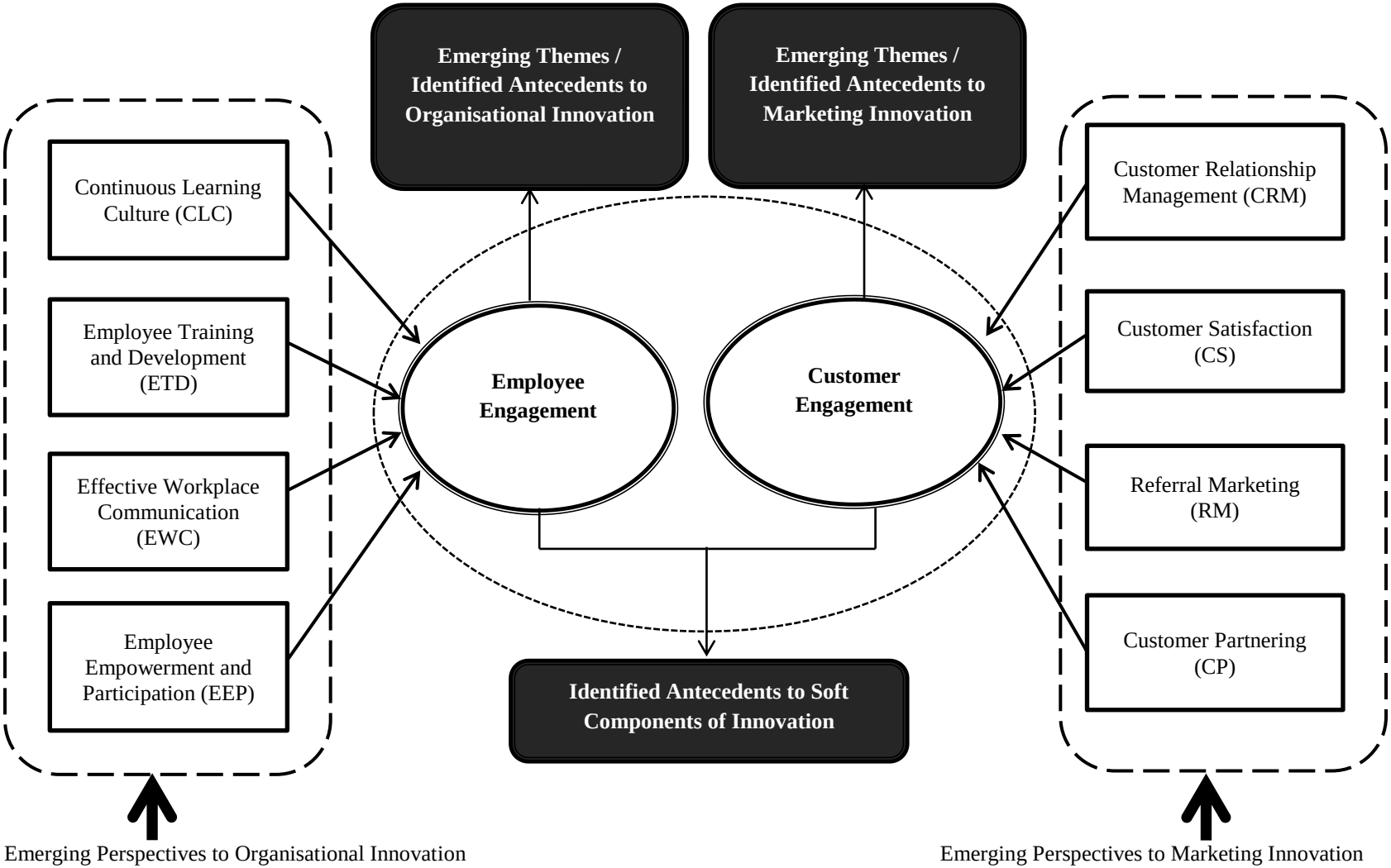
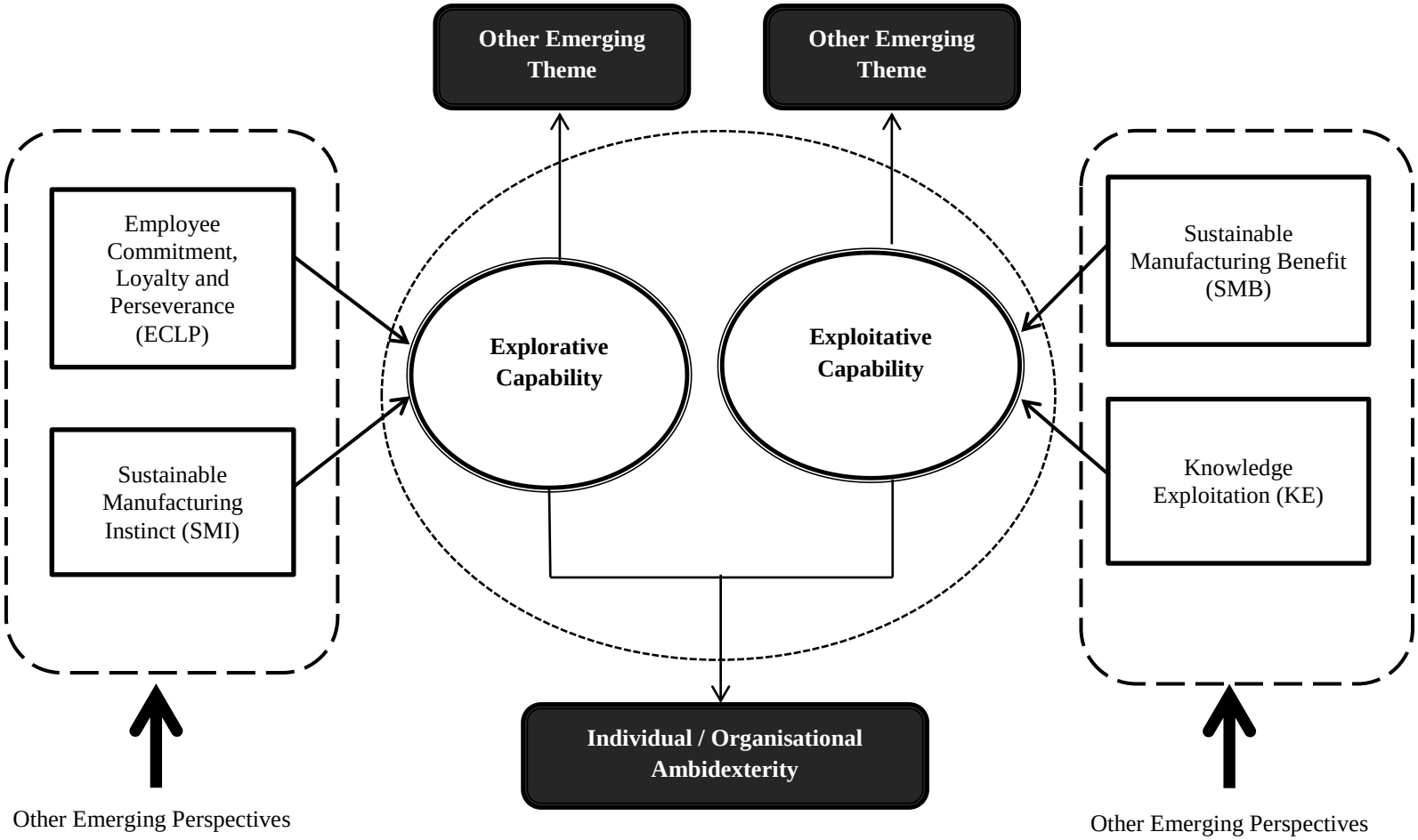


**Figure 4.2: Other Emerging Themes**



Findings reveal that organisational learning is crucial to how SMEs develop their Organisational Innovation capability. Continuous Learning Culture plays a central role in developing Organisation Innovation capability. While it is important to create the environment for continuous learning in the organisations, employees' readiness to learn new things is equally important. Effective Workplace Communication allows feedback of the employees' discoveries into their organisations. Findings also reveal that when the organisation encourages employees' participation in its decision making process, Organisational Innovation capability increases. Cordial relationships with customers are central to how SMEs develop their Marketing Innovation capability. Successful implementation of new marketing methods for products and services requires SMEs to directly engage their customers in their business activities. Many SMEs have strong ability to invent because of their closeness to their customers; Marketing Innovation capability will positively influence their ability to commercialise their inventions successfully.

Findings also reveal that successful implementation of new organisational and marketing changes within the business practices of SMEs: (1) increases employees' responsibilities and commitment; (2) increases the ability of the organisations to address their customer needs and their overall viability; (3) increases exploitation of organisational knowledge; and (4) reduces the overall cost of doing business through constant reduction in waste associated with business activities.

Identified antecedents to soft components of innovation are: Employee Engagement; Customer Engagement; Individual Employee Ambidexterity; and Organisational Ambidexterity, as shown in Figure 4.1 and Figure 4.2. As the study was limited to a few individuals in the South-western region of Nigeria, it was difficult to generalise the findings to all Nigerian SMEs. Therefore, a future research would facilitate generalisation of these exploratory results.

### 4.5 Organisational Culture Assessment of the Case Organisations

The Organisational Culture Assessment Instrument (OCAI) is a validated, focused and widely used method that is based on the Competing Values Framework (CVF) (Cameron and Quinn, 1999; Kaarst-Brown et al., 2004). The CVF is consistent with Schein's approach to analysing the central values of the organisation (Kaarst-Brown et al., 2004); and also provides an approach to examine the characteristics of an

organisational culture that may impact organisational effectiveness and success (Cameron and Quinn, 1999). According to this framework, organisations reflect one or more of four cultural types: Clan; Adhocracy; Market; and Hierarchy. The OCAI was developed from the following six key dimensions identified from the CVF (Cameron and Quinn, 1999; Kaarst-Brown et al., 2004): (1) Dominant Characteristics; (2) Organisational Leadership; (3) Management of Employees; (4) Organisational Glue; (5) Strategic Emphasis; and (6) Criteria of Success.

The OCAI was considered an appropriate tool with which to measure organisational context in the current study and was adopted for the following reasons:

- It will enable a broad understanding of the organisational context of the selected companies,
- The terminology used in the OCAI is very clear,
- It is widely used among the academic community and in the industry,
- It is an established and a validated research tool for the assessment of organisation culture (Cameron and Quinn, 2006; Pierce, 2004; Berrio, 2003; Kaarst-Brown et al., 2004).

The researcher distributed the OCAI to the subjects previously listed in Table 4.1, with detailed instructions on its completion. Cameron and Quinn (2006) recommend the following steps to analyse responses:

Step 1: Add together the scores for all the A responses for each organisation.

Step 2: Repeat Step 1 for all the B, C and D responses.

Step 3: Compute the average score for the A alternatives for each organisation.

Step 4: Repeat Step 3 for the B, C and D alternatives.

Step 5: Plot the average for A, B, C and D obtained in Steps 3 and 4 on the graph to obtain the organisational cultural profile for each organisation.

Descriptions of the resulting organisational culture profiles are provided in graphical form in Figures 4.1 to 4.12. These profiles were obtained from a programmed Microsoft Excel worksheet designed to plot the OCAI graph, courtesy of South Dakota School of Mines and Technology (SDSMT, 2011), by executing the above-mentioned steps. These culture profiles helped to understand the orientations of the

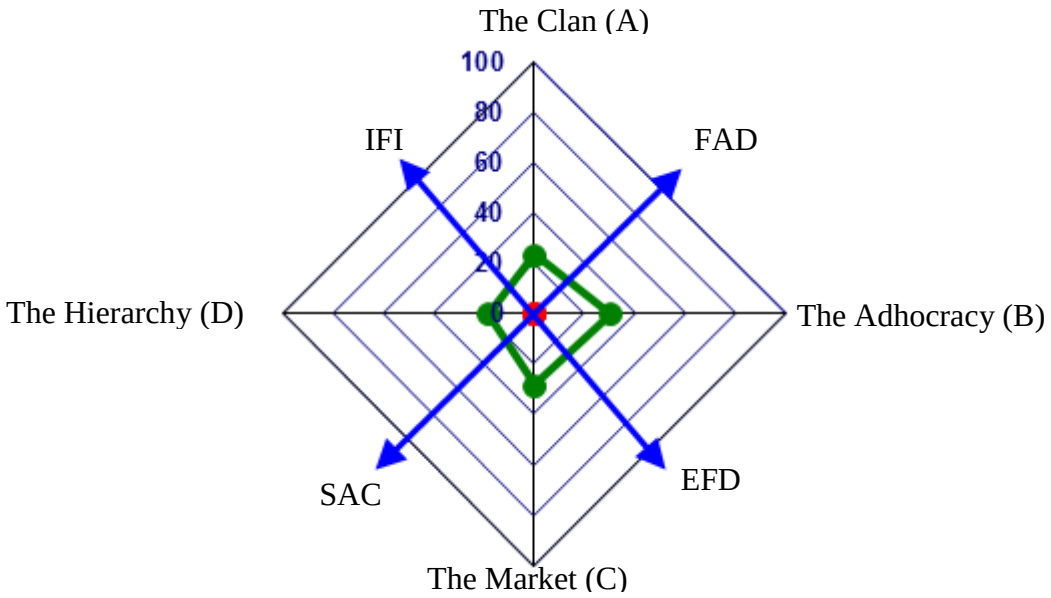
case organisations along two different dimensions of organisational effectiveness and success. The first dimension differentiates criteria that emphasise Flexibility and Discretion from criteria that underline Stability and Control (SAC). The second dimension distinguishes criteria that underline Internal Focus and Integration (IFI) from criteria that emphasise External Focus and Differentiation (EFD).

- Flexibility and Discretion (FAD): High value on the graph implies that emphasis is on adaptability, discretion and dynamism.
- Stability and Control (SAC): High value underlines firmness, order and control.
- Internal Focus and Integration (IFI): High value highlights internal orientation, integration and unity.
- External Focus and Differentiation (EFD): High value emphasise external orientation, differentiation and rivalry.

### 4.5.1 Company A

The measured scores for the adhocracy, the market, the clan and the hierarchy cultures are 30, 29, 23 and 18 respectively. This implies that the adhocracy and the market cultures are dominant in company A. Figure 4.3 shows the organisational cultural profile for company A.

**Figure 4.3: Culture Profile for Company A**



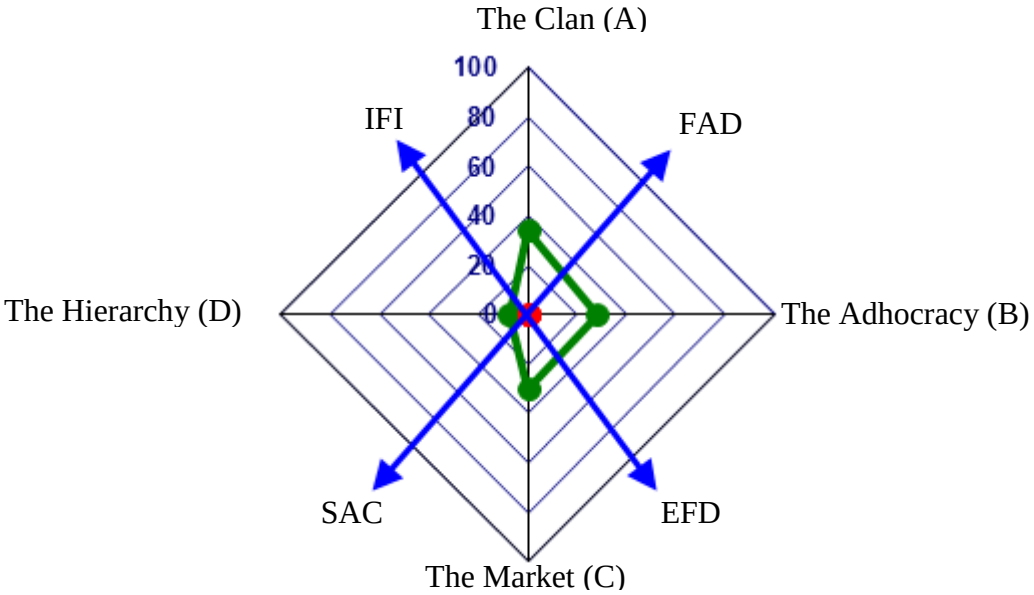

Based on the findings from the literature, the dominant features for this culture profile type include harnessing employee suggestions, innovativeness, thoughtful risk taking,

engaging the customers, tolerance of first-time mistakes, market penetration, competiveness and productivity. The graph also reveals that Company A tends to show more features along the FAD and EFD orientations than the SAC and IFI orientations.

### 4.5.2 Company B

Figure 4.4 shows the organisational cultural profile for company A. The measured scores for the clan, the market, the adhocracy and the hierarchy cultures are 34, 30, 28 and 8 respectively.

**Figure 4.4: Culture Profile for Company B**

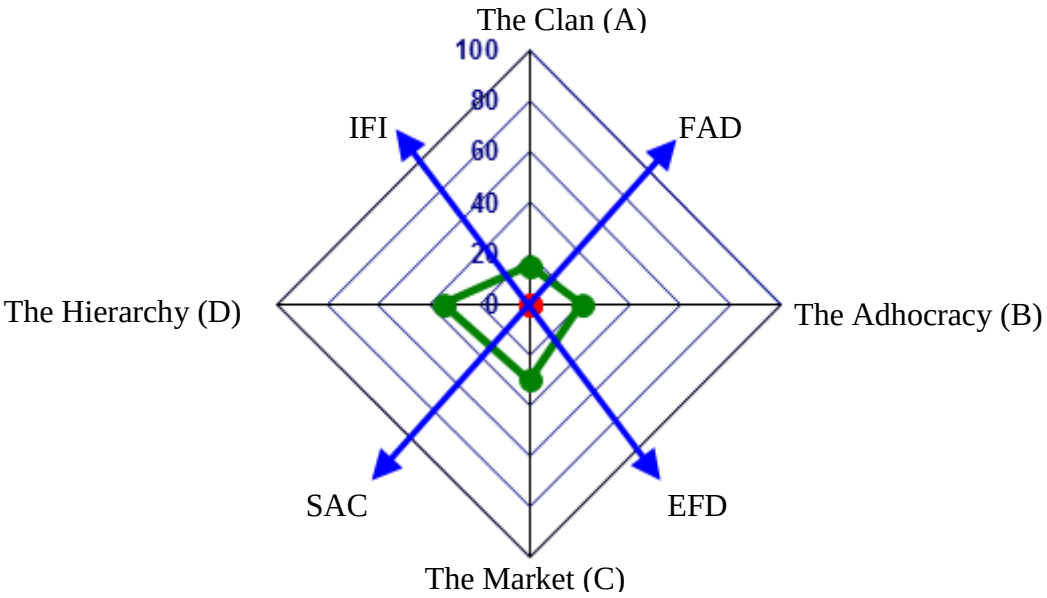



Although company B tends to shows more of the clan culture than any other types, three culture types (the clan, the market and the adhocracy) are dominant. The dominant features include employee empowerment, participation and involvement, cross-functional team, horizontal communication and recognition for employees. The prevailing characteristics of company B, as shown in the graph, are Flexibility, Discretion, External Focus and Differentiation.

### 4.5.3 Company C

The measured scores for the hierarchy, the market, the adhocracy and the clan cultures are 34, 30, 21 and 15 respectively. In company C, the hierarchy culture is the most emphasised culture and the company tends to be more of SAC and EFD orientations than IFI and FAD orientations. Figure 4.5 shows the culture profile of the company.

**Figure 4.5: Culture Profile for Company C**

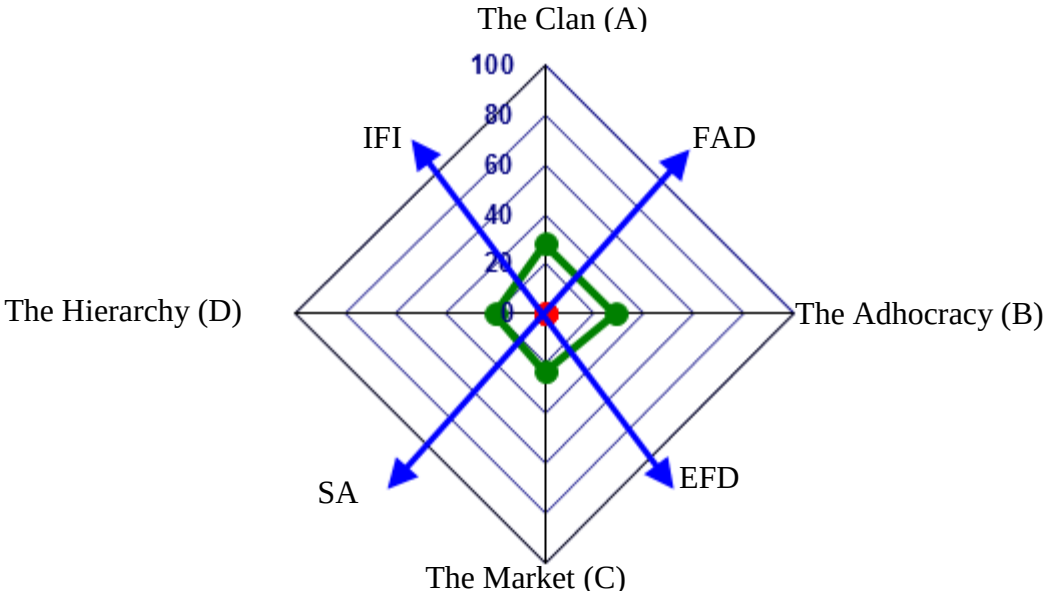



From the graph, the focus is on maintaining stability and control; external positioning and internal maintenance are both important to company C.

### 4.5.4 Company D

Figure 4.6 shows the organisational cultural profile for company D. The measured scores for the clan, the adhocracy, the market and the hierarchy cultures are 28, 28, 24 and 20 respectively. Although the measured scores for both the clan and the adhocracy cultures are equal and higher than the other two, the measured scores for each of the culture types reveal that company D tends to exhibit all the different types, each at pronounced levels.

**Figure 4.6: Culture Profile for Company D**

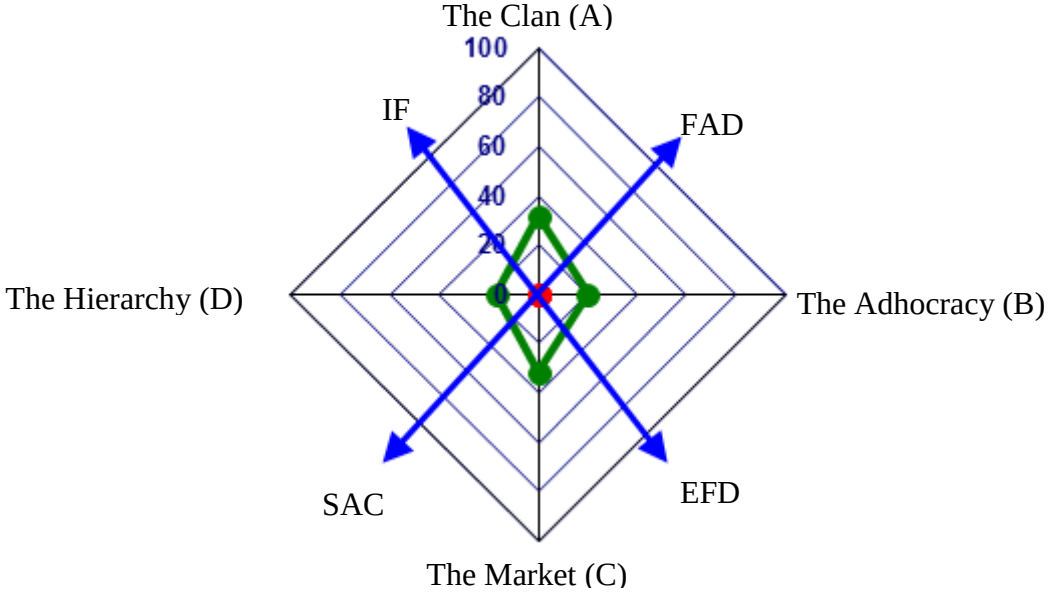



From the graph, company D tends to be more of the FAD and EFD orientations than the IFI and SAC orientations.

### 4.5.5 Company E

The measured scores for the clan, the market, the adhocracy and the hierarchy cultures are 32, 32, 20 and 16 respectively. This indicates that the clan and the market cultures are dominant in company E. The company is tough and demanding, as shown in the high score for the market culture, but these features are accompanied with caring climate, employee empowerment, participation and involvement. Figure 4.7 shows the Culture Profile for Company E.

**Figure 4.7: Culture Profile for Company E**

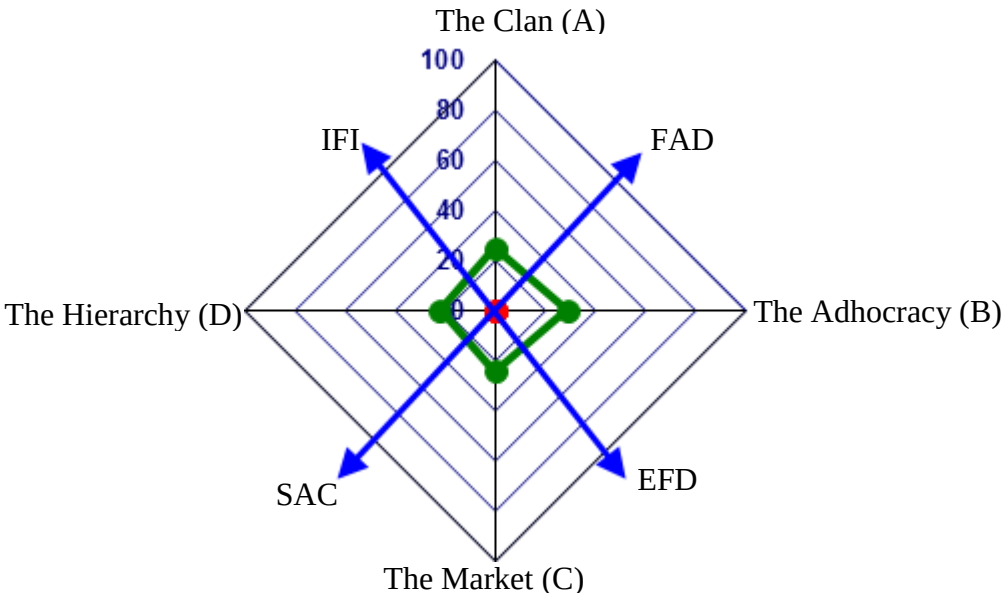


As shown in the culture profile, company E focuses on both the internal maintenance and the external positioning.

### 4.5.6 Company F

From the survey instrument for company F, the average scores for the adhocracy, the clan, the market and the hierarchy cultures are 29, 25, 24 and 22 respectively. The dominant culture is adhocracy culture, prominent features of company F will include opportunity for employee suggestions, process innovativeness, thoughtful risk taking, customer engagement, etc. Figure 4.8 shows the culture profile of company F.

**Figure 4.8: Culture Profile for Company F**

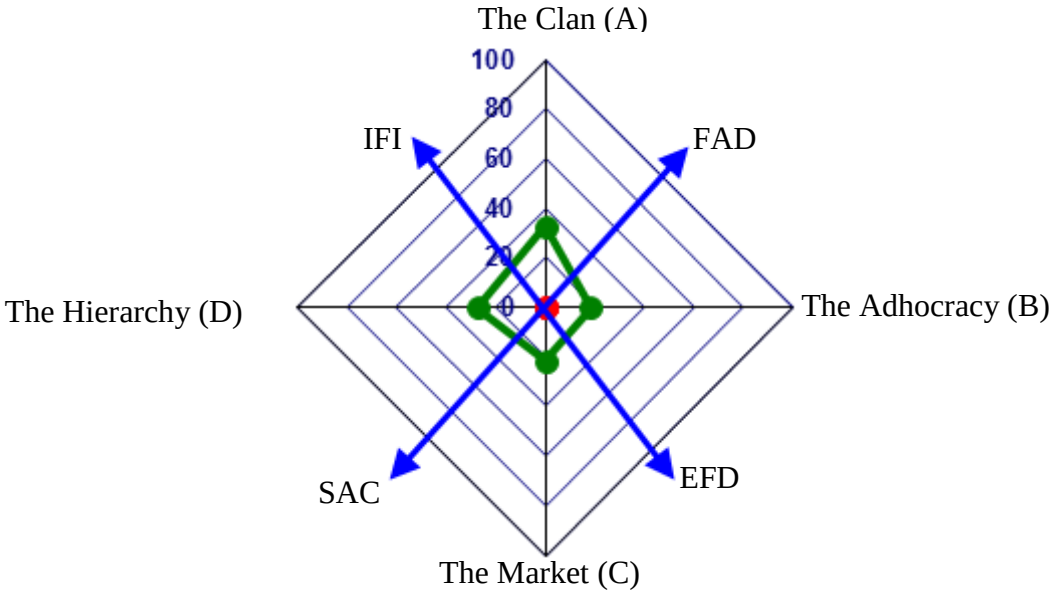



From the graph, company F tends to be more of the FAD and EFD orientations than the IFI and SAC orientations.

### 4.5.7 Company G

For company G, the measured values for the clan, the hierarchy, the market and the adhocracy cultures are 33, 27, 22 and 18 respectively. The clan culture is dominant. Thus, employee empowerment, employee participation and involvement, cross functional team, lateral communication, caring climate and employee recognition are some of the features of the company. Figure 4.9 shows the culture profile of company G.

**Figure 4.9: Culture Profile for Company G**

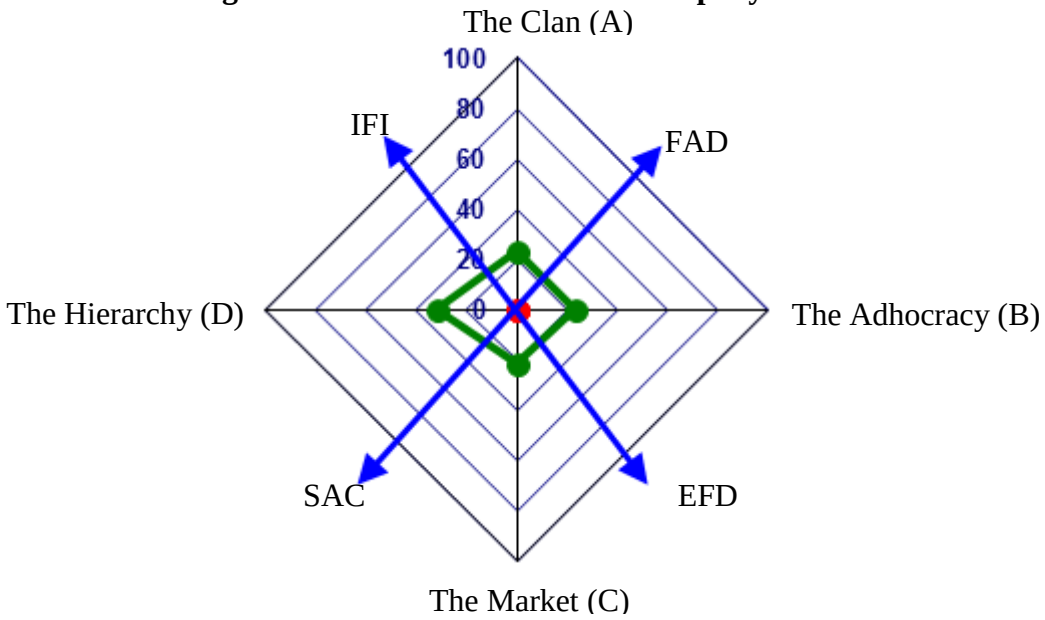



Company G tends to be more of internal focus and integration than any of the other types of orientations.

### 4.5.8 Company H

The measured scores for the hierarchy, the clan, the adhocracy and the market cultures are 32, 23, 23 and 22 respectively. The hierarchy culture is the dominant culture in company H. This shows that company H is a formalised place; formal rules and procedures govern what the employees do. There is an emphasis on stability, efficiency, smooth running and business cost minimisation. Figure 4.10 shows the culture profile for company H.

**Figure 4.10: Culture Profile for Company H**

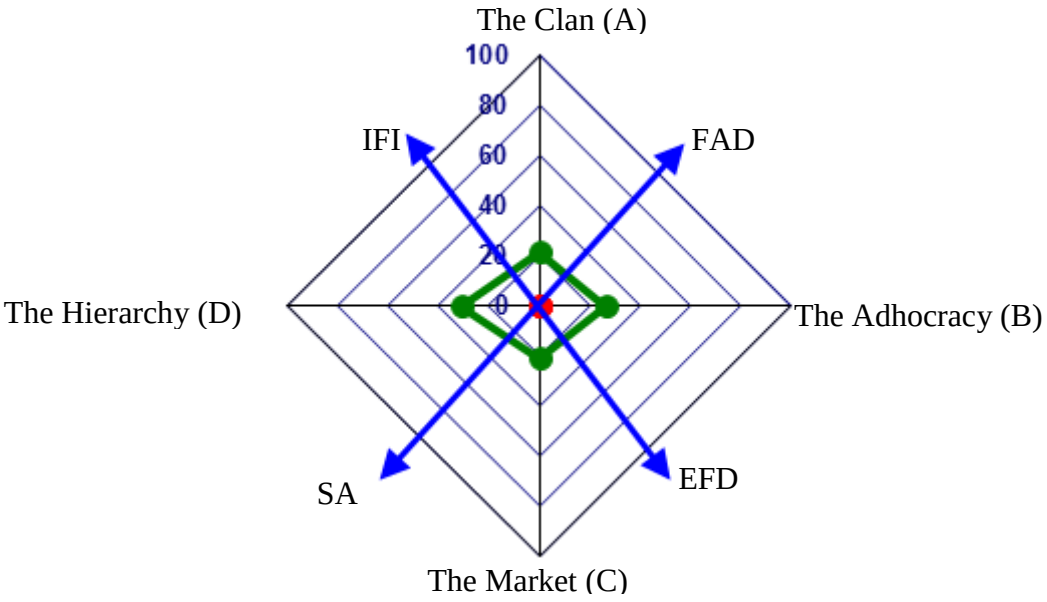


From the graph, Company H tends to focus more on internal maintenance and integration than on external environment and differentiation. It also tends to focus more on a need for stability and control than on a need for flexibility and discretion.

### 4.5.9 Company I

Figure 4.11 shows the organisational culture profile of company I. Except for the adhocracy culture, the measured scores for the culture types are similar to company H. For company I, the scores for the hierarchy, the adhocracy, the clan and the market cultures are 31, 27, 21 and 21 respectively. This implies the hierarchy culture dominates company I, followed by the adhocracy culture.

**Figure 4.11: Culture Profile for Company I**

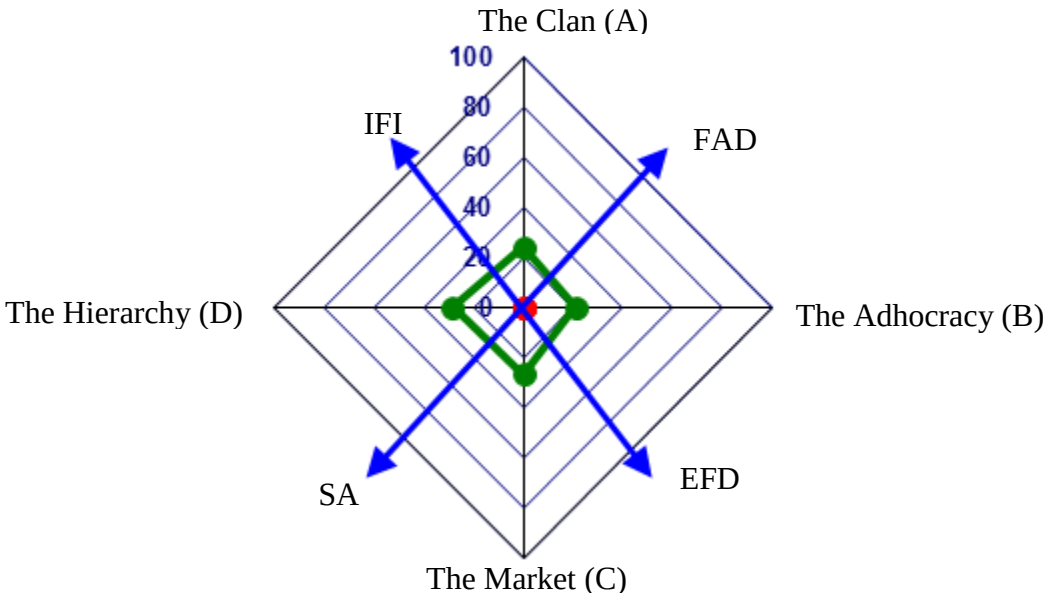



There is a focus on internal maintenance and a need for stability and control but these features are coupled with a need for external positioning and a room for flexibility and discretion.

### 4.5.10 Company J

The dominant culture in company J is a hierarchy culture (score = 28) closely followed by market culture (score = 27). For this company, both the internal maintenance and external positioning are crucial. Stability and control are preferred to flexibility and discretion. Formal rules and policies are more pronounced than employee discretion. Figure 4.12 shows the organisational culture profile for company J.

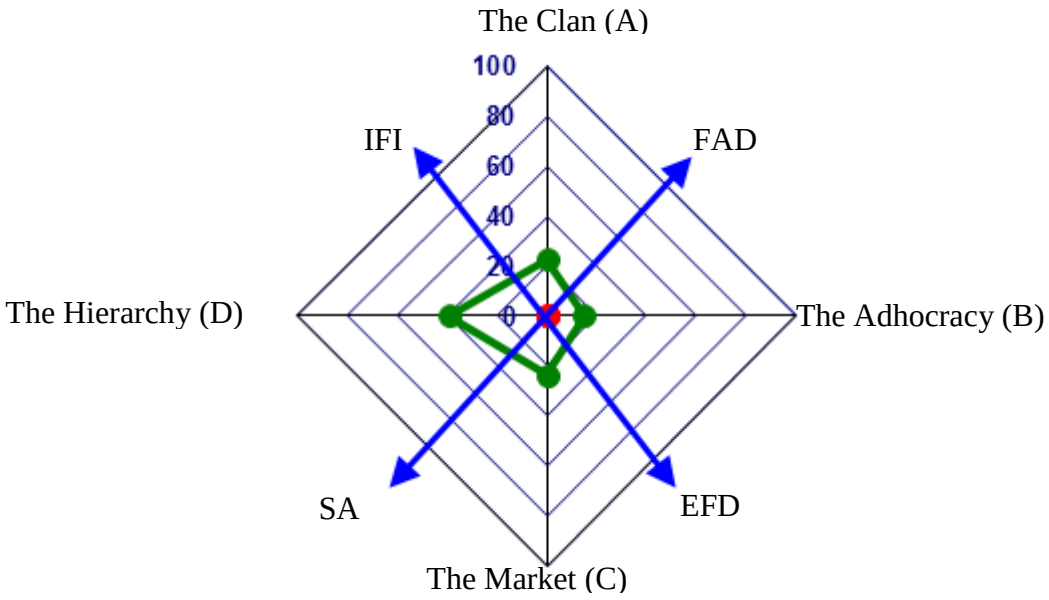
**Figure 4.12: Culture Profile for Company J**




### 4.5.11 Company K

The average scores of 39, 23, 23, and 15 correspond to the hierarchy, the market, the clan and the adhocracy cultures. The hierarchy culture is central to this company. The company is formalised, strict policies and procedures tend to govern what the employees do. Figure 4.13 shows the organisational culture profile of the company.

**Figure 4.13: Culture Profile for Company K**

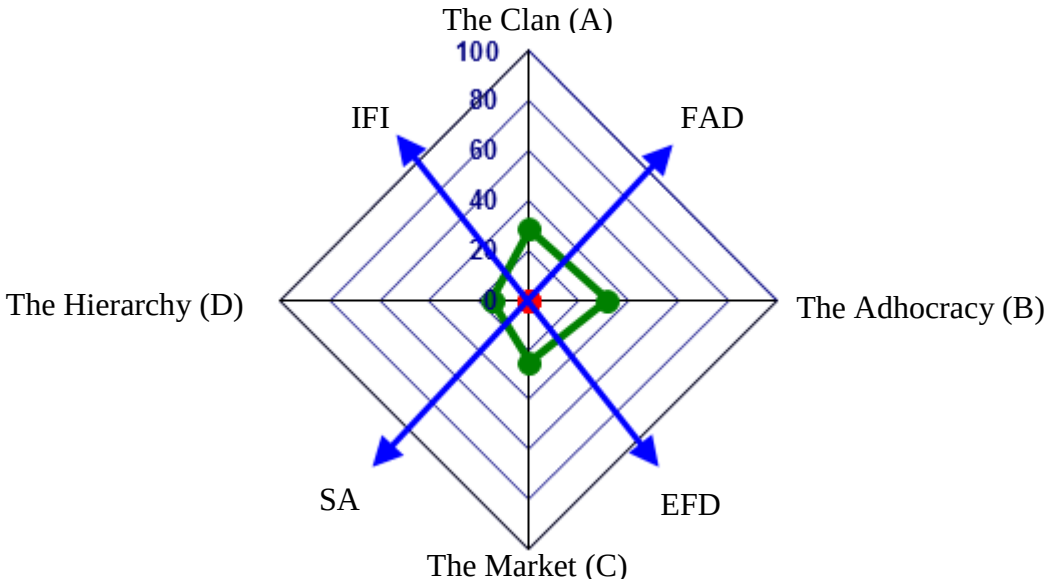


As shown in the culture profile of company K, the focus is on internal maintenance, integration, stability and control.

### 4.5.12 Company L

The obtained culture scores for the adhocracy, the clan, the market and the hierarchy cultures are 32, 28, 25 and 15 respectively. This indicates that the adhocracy culture is dominant in company L. This consequently suggests that there a room for employee suggestions, thoughtful risk taking, innovativeness and customer suggestions. Figure 4.14 shows the culture profile for company L.

**Figure 4.14: Culture Profile for Company L**




Company L tends to focus more on the external positioning and differentiation than on internal environment and integration, as shown in Figure 4.14. Also, the company possesses more of flexibility and discretion features than those features relating to stability and control, as revealed in the culture profile.

## 4.6 Observations from the Culture Profiles

Based on the culture profiles of the case organisations, the case organisations have significant content for all the culture types. Table 4.7 summarises the culture scores for all the case organisations.

**Table 4.7: The Culture Scores for all the Case Organisations**

| | Adhocracy | Clan | Market | Hierarchy |
|---|---|---|---|---|
| **Case Study A** | 30 | 23 | 29 | 18 |
| **Case Study B** | 28 | 34 | 30 | 8 |
| **Case Study C** | 21 | 15 | 30 | 34 |
| **Case Study D** | 28 | 28 | 24 | 20 |
| **Case Study E** | 20 | 32 | 32 | 16 |
| **Case Study F** | 29 | 25 | 24 | 22 |
| **Case Study G** | 18 | 33 | 22 | 27 |
| **Case Study H** | 23 | 23 | 22 | 32 |
| **Case Study I** | 27 | 21 | 21 | 31 |
| **Case Study J** | 21 | 24 | 27 | 28 |
| **Case Study K** | 15 | 23 | 23 | 39 |
| **Case Study L** | 32 | 28 | 25 | 15 |
| **Combined Scores** | 24.33 | 25.75 | 25.75 | 24.17 |

There are cases where one or two cultural types are dominant or weak. For examples:

1) Companies B, D, E, F, G and L have a strong clan culture.
2) Companies A, D, F and L have a strong adhocracy culture.
3) Companies A, B, C, E and J have a strong market culture.
4) Companies C, G, H, I. J and K have a strong hierarchy culture.
5) Company B has a very weak hierarchy culture.
6) Company C has a weak clan culture.
7) Companies E and L have a weak hierarchy culture.
8) Companies G and K have a weak adhocracy culture.

Figure 4.15 compares the culture types across case companies. On average, the scores for all the cultural types are 24.33, 25.75, 25.75, and 24.17 for Adhocracy, Clan, Market, and Hierarchy cultures respectively, as shown in the combined scores for the all the organisations. The implication of the combined culture scores for all the case organisations is that a typical Nigerian SME will exhibit equal scores for all the four culture types.

**Figure 4.15: Comparing Culture Types across the Case Organisations**

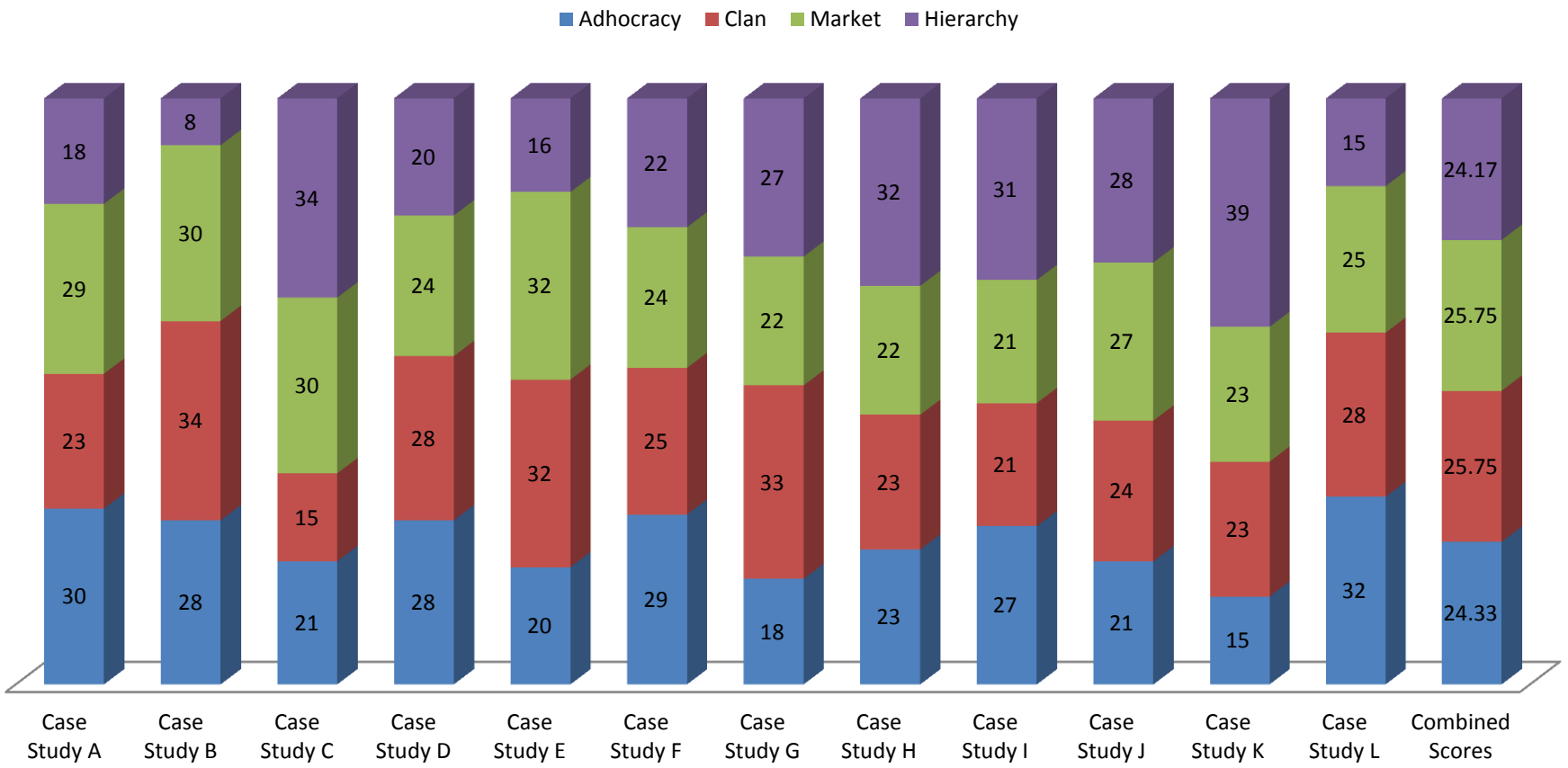


Figure 4.15 also provides a clear picture of the dominant cultural types. Going by the overall average scores for all the cultural types in Table 4.7, no particular cultural type is dominant. Based on these twelve cases, the organisations reflect similar scores for all the four cultural types on average. Therefore, it can be concluded that a hierarchical organisational culture is not a dominant culture across the case study organisations, contrary to the high hierarchical order and centralisation earlier inferred from the high Power Distance Index score of Hofstede's cultural dimensions, in the introductory part of this chapter.

In addition to the above-mentioned observations, the informants (Int.1, Int. 6 and Int. 13) who emphasised Continuous Learning Culture were from the companies (A, F and L) with the highest score for the adhocracy culture. The informants (Int. 2, Int. 4, Int. 5, Int. 6 and Int. 13) who emphasised Employee Empowerment and Participation were from the companies (B, D, E, F and L), which show that of a strong clan culture. Further research is needed to study how these two culture types affect Employee Engagement, having identified its antecedent role to Organisational Innovation capability in section 4.4.

## 4.7 Summary of Chapter

This chapter has presented an extensive account of the first phase of the current research. The chapter has given a brief description of the participants involved in the pilot study, together with: stages involved in arranging for the interviews; the interview and data collection process; and the qualitative data analysis involved. Based on the data obtained from the study subjects, factors promoting Organisational and Marketing Innovations were identified.

Findings from the exploratory stage of the research reveal that Continuous Learning Culture; Employee Training and Development; Effective Workplace Communication; and Employee Empowerment and Participation are needed to promote Organisational Innovation capability. The study also provides evidence that Customer Relationship Management; Customer Satisfaction; Referral Marketing; and Partnering with Customers promote Marketing Innovation capability. The resulting constructs from these factors were used to generate some of the Central Research Themes.

The chapter also presented the result of the preliminary assessment of the organisational context of the case study organisations, measured by the Organisational Culture Assessment Instrument. Descriptions of the organisational culture profiles were presented in graphical forms. Findings reveal that no particular cultural type is dominant across-the-board among the selected cases, contrary to earlier findings from the extant literature related to Nigeria. However, Clan and Adhocracy cultures were identified to be dominant in organisations which emphasised Employee Continuous Learning, Employee Participation and Employee Empowerment. Thus, further research is needed to study how these two culture types affect Employee Engagement, having identified its antecedent role to Organisational Innovation capability, covered earlier in section 4.4.

Four additional research hypotheses emanating from the qualitative phase are articulated as follows: (1) Employee Engagement will positively relate to Organisational Innovation capability; (2) Customer Engagement will positively relate to Marketing Innovation capability; (3) an Adhocracy Culture will promote Employee Engagement; and (4) a Clan Culture will promote Employee Engagement. As this phase of the research study was limited to a few individuals in the South-western region of Nigeria, findings could not be generalised to all Nigerian SMEs. Thus, a quantitative survey design for a large sample of participants was proposed for the second phase of the research to confirm the findings from the initial exploratory phase and to address other emerging research gaps from the literature review chapter. The subsequent chapters focussed on the design and implementation of the quantitative phase of the research.

# Chapter 5

# 5 Quantitative Research Phase: Descriptive Statistics and Exploratory Factor Analysis

The aim of this study is to develop a framework that promotes effective innovation through employees' contributions to organisational ambidexterity, organisational innovation capability and marketing innovation capability. The study aims to contribute to the knowledge of understanding of Contextual Individual Ambidexterity (CIA) and Employee Engagement (EE) of the shop-floor staff by exploring the components of organisational structure and culture that can improve their CIA and EE levels. Based on the research questions and the hypotheses that emerged from the research gaps in the literature review, covered earlier in chapter 2, appropriate research constructs were identified for the questionnaires from the literature and the preliminary qualitative research study, discussed earlier in chapters 3 and 4.

To explore the organisational context in Nigerian Manufacturing and Service Organisations, four independent variables were used as a result of their relevance in innovation and ambidexterity literature and findings from the qualitative phase of this research. These variables include: Organic structure; Clan Culture; Adhocracy Culture; and Knowledge Sharing Culture. Other constructs in the shop-floor staff survey are: employee engagement, active employee ambidexterity and passive employee ambidexterity. Managerial staff survey focussed on the organisational innovation, marketing innovation, organisational ambidexterity, customer engagement and organisational performance. Details of these constructs and the items used to measure them during the data collection are placed in section 3.4 In order to validate findings from the qualitative phase of the study, and to answer the research questions posited in chapter 1, quantitative data were collected from both managerial and non-managerial staff in Nigerian Small and Medium-sized Manufacturing and Service Organisations. This chapter focussed on the descriptive statistics and the exploratory factor analyses of the survey data for the shop-floor employees and the managerial staff.

## 5.1 Quantitative Data Collection

The main survey was conducted through adoption of a self-completed questionnaire using online and paper versions in order to capture organisations that have reliable

access to internet facilities and organisations that have no reliable access to internet facilities. The quantitative data was collected over a period of five months from 14 June 2012 to 20 November 2012. In addition to the established contacts during the qualitative phase, some useful pieces of information for certain of the companies, such as contact information, were obtained from the Facebook website.

A pair of unique URLs (one for managerial staff and the other for non-managerial staff) was sent to each of the participating organisations that opted for the online survey. Thus, the first company was given: https://www.survey.lboro.ac.uk/manager**1** (for managerial survey); and https://www.survey.lboro.ac.uk/employee**1** (for non-managerial survey), the second company was given: https://www.survey.lboro.ac.uk/manager**2** (for managerial survey); and https://www.survey.lboro.ac.uk/employee**2** (for non-managerial survey), and so on. This encouraged accurate monitoring of the responses from each company and also allowed appropriate feedback to be given to the gatekeepers in order to encourage more participation: the actual number of responses coming from each of the companies was known during the data collection process. It was, therefore, difficult for any gatekeepers to falsify the number of responses from their companies for the researcher. Knowing the actual responses at any given time also encouraged completion of the needed follow-up.

### 5.1.1 Response Rate

Table 5.1 shows a summary of responses for the survey based on the Company Level Analysis. In total, there were 398 and 202 completed questionnaires received from the shop-floor employees and the managerial staff, respectively. In order to estimate the response rate, completed questionnaires on company level basis was used.

**Table 5.1: Summary of Responses for the Field Survey (Company Level)**

| Collection Method | Companies with Paper Copies/URL links | Companies with completed Managerial Staff Survey | Companies with completed Shop-floor Staff Survey | Completed Survey for Company Level Analysis |
|---|---|---|---|---|
| Online Questionnaire | 100 | 37 | 42 | 30 |
| Paper Questionnaire | 100 | 30 | 30 | 30 |
| Total | 200 | 67 | 72 | 60 |
| **Response rate** | | **33.5%** | **36.0%** | **30.0%** |

Out of the 200 companies contacted, completed questionnaires received from managerial staff had a 33.5% response rate, while shop-floor staff was a 36.0%

response rate. However, the rate of response based on completed questionnaires suitable for company level analysis, is 30%, as shown in Table 5.1.

### 5.1.2 Data Screening

Data screening is necessary prior to any statistical analysis. One recommendation for a data screening process is to ensure that coding of responses is done accurately (Baumgartner and Homburg, 1996). According to Olinsky et al. (2003), missing data is also a common problem with research datasets. Thus, treatment of missing data is an important consideration prior to any meaningful data analysis. In order to reduce the problems of missing data, the design of the online survey ensured that respondents could not submit their survey without completing the survey items. The few cases of missing data encountered in the paper survey were treated using imputation method as recommended by Olinsky et al. (2003) and Gold and Bentler (2000). This approach involved substituting missing observations on a particular variable with the sample mean for that variable.

### 5.1.3 Non-response bias

This is an attempt to determine whether the responses from the research participants differ substantially from those who do not participate in the study. According to Churchill (1999) and Armstrong and Overton (1977), non-response bias analysis is needed before generalising the sample to the population. Thus, it allows the researcher to relate findings from the study sample to the entire population. Some of the methods used in estimating non-response bias include: comparison with known values for the population; the use of subjective estimates; and time trend method via extrapolation (Armstrong and Overton, 1977).

According to them, the time trend method assumes that late respondents are more like non-respondents. This method compares the characteristics of responses coming from the early and late respondents. Factors relating to non-response bias are assumed to be eliminated if the characteristics of the research data from the early respondents do not different from that of the late respondents. Thus, this eliminates factors relating to non-response bias in the survey data. It also implies that the information obtainable from the companies that participated in the research can be generalised to the initial planned sample for the study. The time trend method was adopted in this study to analyse non-response bias. Based on the collection date of research data from the respondents, three different groups of respondents were identified (Table 5.2).

**Table 5.2: Classification for Non-Response Bias Analysis**

| Group | Managerial Staff Online Survey | Shop-floor Staff Online Survey | Managerial Staff Paper Survey | Shop-floor Staff Paper Survey |
|---|---|---|---|---|
| Selected Early Respondents | 20 | 20 | 20 | 20 |
| Intermediate Respondents | 56 | 75 | 66 | 243 |
| Selected Late Respondents | 20 | 20 | 20 | 20 |
| Total | 96 | 115 | 106 | 283 |

The method compared all the survey items for two main groups: the first is a group of 20 survey respondents with early submission; and the second is a group of the last 20 survey respondents with late submission. Based on the survey submission date, the intermediate groups are excluded to clearly differentiate the early respondents from the late respondents. It is important to identify the types of data collected in the survey in order to determine the appropriate statistical test to explore whether the two samples are different. Table 5.3 shows the three main classes of data collected in the study.

**Table 5.3: Three Main Classes of the Field Data**

| Variable Type | Appropriate Statistical Tests | Number of Items in Managerial Survey | Number of Items in Shop-floor Survey |
|---|---|---|---|
| Nominal | Non-parametric | 6 | 14 |
| Ordinal | Non-parametric | 69 | 53 |
| Scale (Interval and Ratio) | Parametric | 4 | 4 |
| Total Items | | 79 | 71 |

Nominal variables are categorical variables; they have neither numerical value nor any intrinsic order to the categories. Ordinal variables are similar to nominal variables but there is a clear ordering of data with the former. The third group, scale variable, combines interval and ratio variables. Interval variables have an arbitrary zero; this value of zero does not imply that the survey data have none of the quantity being measured. In a ratio variable, however, a value of zero does mean that there is none of the quantity being measured.

Having identified the three main classes of data in the survey, the appropriate statistical analyses needed to compare the two independent groups, that is the early respondents and the late respondents, are the independent t-test and the Mann-Whitney test. The independent t-test was used for the four scale variables while the Mann-Whitney test was used for the remaining ordinal and nominal variables. Table

5.4 shows the results of the analysis. For further reference, the results of the detailed statistical analysis for non-response bias are placed in appendices I, J, K and L.

**Table 5.4: Results of the Non-Response Bias Analysis**

| **Managerial Staff** | **p-value, two-tailed** | | **Shop-floor Staff** | **p-value, two-tailed** | |
|---|---|---|---|---|---|
| Research Items | Online | Paper | Research Items | Online | Paper |
| Company Type (N) | 1.000 | 0.000 | Company Type (N) | 0.799 | 0.000 |
| Company Age (S) | 0.011 | 0.006 | Company Age (S) | 0.056 | 0.000 |
| Company Location (N) | 0.327 | 0.000 | Company Location (N) | 0.014 | 0.002 |
| Manager Gender (N) | 0.799 | 0.183 | Employee Gender (N) | 0.429 | 0.183 |
| Age (S) | 0.370 | 0.613 | Age (S) | 0.633 | 0.383 |
| Manager's Present Experience (S) | 0.890 | 0.807 | Employee's Present Experience (S) | 0.676 | 0.001 |
| Manager's Past Experience (S) | 0.040 | 0.560 | Employee's Past Experience (S) | 0.221 | 0.005 |
| Company Size (N) | 0.024 | 0.046 | Company Size (N) | 0.799 | 0.183 |
| Qualification (N) | 0.174 | 0.008 | Qualification (N) | 0.478 | 0.127 |
| Professional Qualification (N) | 0.799 | 1.000 | Professional Qualification (N) | 0.799 | 0.429 |
| Org_Inno_1 (O) | 0.989 | 0.640 | Organicity1 (O) | 0.989 | 0.091 |
| Org_Inno_2 (O) | 0.698 | 0.678 | Organicity2 (O) | 1.000 | 0.841 |
| Org_Inno_3 (O) | 0.414 | 0.327 | Organicity3 (O) | 0.640 | 0.005 |
| Org_Inno_4 (O) | 0.121 | 1.000 | Organicity4 (O) | 0.968 | 0.102 |
| Org_Inno_5 (O) | 0.620 | 0.904 | Organicity5 (O) | 0.429 | 0.547 |
| Org_Inno_6 (O) | 0.904 | 0.012 | Organicity6 (O) | 0.192 | 0.602 |
| Org_Inno_7 (O) | 0.883 | 0.799 | Organicity7 (O) | 0.620 | 0.142 |
| Org_Inno_8 (O) | 0.076 | 0.114 | Organicity8 (O) | 0.989 | 0.925 |
| Org_Inno_9 (O) | 0.301 | 0.512 | Clan1 (O) | 0.035 | 0.052 |
| Org_Inno_10 (O) | 0.779 | 0.478 | Clan2 (O) | 0.314 | 0.678 |
| Mar_Inno_1 (O) | 0.383 | 0.461 | Clan3 (O) | 0.314 | 0.127 |
| Mar_Inno_2 (O) | 0.640 | 0.369 | Clan4 (O) | 0.121 | 0.033 |
| Mar_Inno_3 (O) | 0.529 | 0.478 | Clan5 (O) | 0.355 | 0.369 |
| Mar_Inno_4 (O) | 0.165 | 0.478 | Adhocracy1 (O) | 0.547 | 0.659 |
| Mar_Inno_5 (O) | 0.461 | 0.883 | Adhocracy2 (O) | 0.398 | 0.529 |
| Mar_Inno_6 (O) | 0.327 | 0.341 | Adhocracy3 (O) | 0.327 | 0.678 |
| Mar_Inno_7 (O) | 0.301 | 0.904 | Adhocracy4 (O) | 0.947 | 0.142 |
| Mar_Inno_8 (O) | 0.904 | 0.904 | Adhocracy5 (O) | 0.659 | 0.565 |
| Mar_Inno_9 (O) | 0.253 | 0.192 | Adhocracy6 (O) | 0.165 | 0.005 |
| Mar_Inno_10 (O) | 0.968 | 0.121 | KnowledgeSharing1 (O) | 0.799 | 0.108 |
| Mar_Inno_11 (O) | 0.512 | 0.602 | KnowledgeSharing2 (O) | 0.659 | 0.369 |
| Mar_Inno_12 (O) | 0.277 | 0.659 | KnowledgeSharing3 (O) | 0.414 | 0.718 |
| Mar_Inno_13 (O) | 0.369 | 0.738 | KnowledgeSharing4 (O) | 0.165 | 0.072 |
| OA_Explore1 (O) | 0.820 | 0.040 | Emp_Engagement1 (O) | 0.968 | 0.341 |
| OA_Explore2 (O) | 0.820 | 0.640 | Emp_Engagement2 (O) | 0.862 | 0.989 |
| OA_Explore3 (O) | 0.512 | 0.512 | Emp_Engagement3 (O) | 0.883 | 0.925 |
| OA_Explore4 (O) | 0.583 | 0.779 | Emp_Engagement4 (O) | 0.265 | 0.640 |
| OA_Explore5 (O) | 0.429 | 0.043 | Emp_Engagement5 (O) | 0.265 | 0.253 |
| OA_Explore6 (O) | 0.495 | 0.142 | Emp_Engagement6 (O) | 0.149 | 0.289 |
| OA_Exploit1 (O) | 0.445 | 0.091 | Emp_Engagement7 (O) | 0.327 | 0.201 |
| OA_Exploit2 (O) | 0.142 | 0.565 | Emp_Engagement8 (O) | 0.718 | 0.314 |
| OA_Exploit3 (O) | 0.820 | 0.327 | Emp_Engagement9 (O) | 0.046 | 0.369 |

**Table 5.4: Results of the Non-Response Bias Analysis (Cont'd)**

| **Managerial Staff** | **p-value, two-tailed** | | **Shop-floor Staff** | **p-value, two-tailed** | |
|---|---|---|---|---|---|
| Research Items | Online | Paper | Research Items | Online | Paper |
| OA_Exploit4 (O) | 0.989 | 0.738 | Emp_Engagement10 (O) | 0.183 | 0.698 |
| OA_Exploit5 (O) | 0.738 | 0.127 | Emp_Engagement11 (O) | 0.174 | 0.698 |
| OA_Exploit6 (O) | 0.277 | 0.925 | Emp_Engagement12 (O) | 0.659 | 0.006 |
| MA_Explore1 (O) | 0.799 | 0.076 | PEA_Explore1 (O) | 0.904 | 0.004 |
| MA_Explore2 (O) | 0.862 | 0.192 | PEA_Explore2 (O) | 0.904 | 0.445 |
| MA_Explore3 (O) | 0.341 | 0.314 | PEA_Explore3 (O) | 0.529 | 0.121 |
| MA_Explore4 (O) | 0.799 | 0.429 | PEA_Explore4 (O) | 0.602 | 0.165 |
| MA_Explore5 (O) | 0.779 | 0.383 | PEA_Explore5 (O) | 0.862 | 0.529 |
| MA_Explore6 (O) | 0.314 | 0.277 | PEA_Exploit1 (O) | 0.383 | 0.183 |
| MA_Explore7 (O) | 0.355 | 0.718 | PEA_Exploit2 (O) | 0.495 | 0.063 |
| MA_Exploit1 (O) | 0.096 | 0.211 | PEA_Exploit3 (O) | 0.192 | 0.060 |
| MA_Exploit2 (O) | 0.049 | 0.583 | PEA_Exploit4 (O) | 0.799 | 0.033 |
| MA_Exploit3 (O) | 0.056 | 0.174 | PEA_Exploit5 (O) | 1.000 | 0.134 |
| MA_Exploit4 (O) | 0.018 | 0.883 | Explore14 (N) | 0.429 | 0.799 |
| MA_Exploit5 (O) | 0.779 | 0.779 | Explore15 (N) | 0.289 | 0.108 |
| MA_Exploit6 (O) | 0.529 | 0.369 | Explore16 (N) | 0.429 | 0.602 |
| MA_Exploit7 (O) | 0.165 | 0.779 | Explore17 (N) | 1.000 | 0.289 |
| Cstmer_E1 (O) | 0.925 | 0.678 | Exploit14b (N) | 0.289 | 1.000 |
| Cstmer_E2 (O) | 0.445 | 0.046 | Exploit15b (N) | 0.289 | 0.108 |
| Cstmer_E3 (O) | 0.495 | 0.134 | Exploit16b (N) | 0.602 | 1.000 |
| Cstmer_E4 (O) | 0.495 | 0.698 | Exploit17b (N) | 1.000 | 0.429 |
| Cstmer_E5 (O) | 0.383 | 0.799 | AEA_Explore14a (O) | 0.221 | 0.046 |
| Cstmer_E6 (O) | 0.265 | 0.841 | AEA_Explore15a (O) | 0.091 | 0.068 |
| Cstmer_E7 (O) | 0.108 | 0.883 | AEA_Explore16a (O) | 0.758 | 0.659 |
| Cstmer_E8 (O) | 0.142 | 0.149 | AEA_Explore17a (O) | 0.068 | 0.026 |
| Cstmer_E9 (O) | 0.289 | 0.076 | AEA_Exploit14bi (O) | 0.461 | 0.201 |
| Cstmer_E10 (O) | 0.841 | 0.698 | AEA_Exploit15bi (O) | 0.149 | 0.040 |
| Cstmer_E11 (O) | 0.698 | 0.033 | AEA_Exploit16bi (O) | 0.779 | 0.445 |
| Cstmer_E12 (O) | 0.461 | 0.758 | AEA_Exploit17bi (O) | 0.414 | 0.192 |
| Cstmer_E13 (O) | 0.779 | 0.925 | | | |
| Cstmer_E14 (O) | 0.820 | 0.989 | | | |
| Sales Performance (O) | 0.738 | 0.021 | | | |
| Growth rate of sales (O) | 0.820 | 0.017 | | | |
| Achievement of sales target (O) | 0.968 | 0.108 | | | |
| Return on Investment (O) | 0.947 | 0.001 | | | |
| Growth of net profit over last 3 years (O) | 0.620 | 0.000 | | | |
| Overall Profitability (O) | 0.201 | 0.007 | | | |

The results in Table 5.4 show that the difference between the early respondents and the late respondents was significant for 31 items out of 300 items from the online and paper questionnaires. 269 items show no significant difference between the early and the late respondents. Significance implies that there is a difference between the early and the late respondents; while no significance means that the two groups are the

same. This suggests that for about 90% of the survey items, early respondents agree with late respondents. According to Daniel et al. (1982), non-response bias is likely to be present in every survey data, irrespective of the techniques used in the data collection. Thus, a 90% level of agreement between the early and the late respondents is considered acceptable for the data collected over a period of five months. Therefore, the results for the non-response bias analysis can be interpreted as follows:

- Those who did not participate in this research were not significantly different from the research participants.
- The information obtained from the data collected (the actual sample) could be generalised to the initial target sample or population.

## 5.2 Sample Characteristics and Descriptive Statistics

The nature of the research gaps and questions necessitated data collection from both managerial and shop-floor staff in manufacturing and service SMEs. Thus, the descriptive analysis of the sample will be at three levels of analysis: shop-floor staff, managerial staff and organisational levels. Descriptive statistics ensure that the large volume of data in the research is presented with just a few values (Brace et al., 2006).

### 5.2.1 Individual Attributes for Shop-floor Staff Survey

This section contains the attributes of the shop-floor staff who participated in the survey: 398 shop-floor employees from 72 manufacturing and service organisations. Table 5.5 summarises the gender of the shop-floor employees. 68.1% of the 398 employees who participated in the survey are male.

**Table 5.5: Gender of the Shop-floor Employees**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Male | 271 | 68.1 | 68.1 | 68.1 |
| | Female | 127 | 31.9 | 31.9 | 100.0 |
| | Total | 398 | 100.0 | 100.0 | |

Source: Survey Results

Table 5.6 shows the frequency distribution of the age of the shop-floor staff; 216 employees are between 21 and 30 years old. Thus, more than half of the shop-floor employees who participated in the study are in this age category. Only 5 shop-floor employees are above 51 years old.

**Table 5.6: Age of the Shop-floor Staff**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| | 20 years and below | 37 | 9.3 | 9.3 | 9.3 |
| | 21-30 years | 216 | 54.3 | 54.3 | 63.6 |
| | 31-40 years | 110 | 27.6 | 27.6 | 91.2 |
| | 41-50 years | 30 | 7.5 | 7.5 | 98.7 |
| | 51 years and above | 5 | 1.3 | 1.3 | 100.0 |
| | Total | 398 | 100.0 | 100.0 | |

Source: Survey Results

Table 5.7 shows the number of years that shop-floor employees have spent with their respective organisations.

**Table 5.7: Descriptive Statistics for the Employees' Work Experience in their Current Organisation**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 0-1 years | 147 | 36.9 | 36.9 | 36.9 |
| | 2-5 years | 198 | 49.7 | 49.7 | 86.7 |
| | 6-10 years | 35 | 8.8 | 8.8 | 95.5 |
| | 11-15 years | 14 | 3.5 | 3.5 | 99.0 |
| | 16 years and above | 4 | 1.0 | 1.0 | 100.0 |
| | Total | 398 | 100.0 | 100.0 | |

Source: Survey Results

Almost half of the participants have spent between 2 to 5 years with their companies. One percent of the participating employees have spent above 15 years with their company. Table 5.8 shows the previous work experience of the employees before joining their current company.

**Table 5.8: Previous Work Experience of the Employees**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | My first job | 146 | 36.7 | 36.7 | 36.7 |
| | 1-5 years | 188 | 47.2 | 47.2 | 83.9 |
| | 6-10 years | 37 | 9.3 | 9.3 | 93.2 |
| | 11-15 years | 21 | 5.3 | 5.3 | 98.5 |
| | 16 years and above | 6 | 1.5 | 1.5 | 100.0 |
| | Total | 398 | 100.0 | 100.0 | |

Source: Survey Results

146 employees out of the 398 participating shop-floor staff had no previous work experience. 188 employees had between 1 and 5 years while only 27 employees had

well over 10 years of work experience before joining their current organisations. Table 5.9 and Table 5.10 respectively show the academic and professional qualifications of the shop-floor employees.

**Table 5.9: Employees' Highest Academic Qualifications**

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| Craftsmanship Certificate | 22 | 5.5 | 5.5 | 5.5 |
| WAEC / SSCE / GCE / NECO | 141 | 35.4 | 35.4 | 41.0 |
| Ordinary National Diploma (OND) | 79 | 19.8 | 19.8 | 60.8 |
| Higher National Diploma (HND) | 42 | 10.6 | 10.6 | 71.4 |
| Bachelor Degree | 93 | 23.4 | 23.4 | 94.7 |
| Masters Degree | 21 | 5.3 | 5.3 | 100.0 |
| Total | 398 | 100.0 | 100.0 | |

Source: Survey Results

**Table 5.10: Employees' Professional Qualifications**

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| No professional qualification | 364 | 91.5 | 91.5 | 91.5 |
| Additional Professional qualification(s) obtained | 34 | 8.5 | 8.5 | 100.0 |
| Total | 398 | 100.0 | 100.0 | |

Source: Survey Results

A few of them have a craftsmanship certificate; 35.4% have a Senior Secondary School Certificate while 23.4 % have a bachelor degree. Only 34 out of the 398 participants have at least one additional professional qualification, as shown in Table 5.10. Table 5.11 details the two methods used in collecting the shop-floor staff questionnaires.

**Table 5.11: Survey Methods (Shop-floor Staff)**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Online Questionnaire | 115 | 28.9 | 28.9 | 28.9 |
| | Paper Questionnaire | 283 | 71.1 | 71.1 | 100.0 |
| | Total | 398 | 100.0 | 100.0 | |

Source: Survey Results

115 shop-floor employees completed the survey via the online method while 283 shop-floor employees completed the paper survey. Table 5.12 shows that 57.3% of

the shop-floor employees are from manufacturing organisations while the remaining 42.7% are from service organisations.

**Table 5.12: Company Type (Shop-floor Employees)**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Manufacturing | 228 | 57.3 | 57.3 | 57.3 |
| | Service | 170 | 42.7 | 42.7 | 100.0 |
| | Total | 398 | 100.0 | 100.0 | |

Sources: Survey Results

Table 5.13 reveals that participating shop-floor employees are from companies located in seven states and the Federal Capital Territory.

**Table 5.13: Company Geographical Location (Shop-floor Employees)**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Abuja | 7 | 1.8 | 1.8 | 1.8 |
| | Kaduna | 2 | .5 | .5 | 2.3 |
| | Lagos | 176 | 44.2 | 44.2 | 46.5 |
| | Ogun | 124 | 31.2 | 31.2 | 77.6 |
| | Ondo | 22 | 5.5 | 5.5 | 83.2 |
| | Osun | 57 | 14.3 | 14.3 | 97.5 |
| | Oyo | 8 | 2.0 | 2.0 | 99.5 |
| | Rivers | 2 | .5 | .5 | 100.0 |
| | Total | 398 | 100.0 | 100.0 | |

Source: Survey Results

Observations show that 44.2% of the employees are from Lagos State, the commercial capital of Nigeria. 31.2% of the employees are from Ogun State, a neighbouring state to Lagos State. There are only 2 shop-floor employees from Kaduna and Rivers States. Kaduna State is located in the northern part of Nigeria. The low response from these parts of the country could be linked to the limited access to these regions due to the prevailing crisis in the regions, such as religious and ethnic crisis and agitation for resource control (Ako, 2012; Onuorah et al., 2012).

### 5.2.2 Individual Attributes for Managerial Staff Survey

This section contains the attributes of the managerial staff who participated in the survey; 202 managerial staff from 67 manufacturing and service organisations. Table 5.14 shows that 68.8% of the 202 employees male.

**Table 5.14: Gender of the Managerial Staff**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Male | 139 | 68.8 | 68.8 | 68.8 |
| | Female | 63 | 31.2 | 31.2 | 100.0 |
| | Total | 202 | 100.0 | 100.0 | |

Source: Survey Results

Table 5.15 shows the frequency distribution of the age of the managerial staff.

**Table 5.15: Age of the Managerial Staff**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 20 years and below | 6 | 3.0 | 3.0 | 3.0 |
| | 21-30 years | 75 | 37.1 | 37.1 | 40.1 |
| | 31-40 years | 84 | 41.6 | 41.6 | 81.7 |
| | 41-50 years | 25 | 12.4 | 12.4 | 94.1 |
| | 51 years and above | 12 | 5.9 | 5.9 | 100.0 |
| | Total | 202 | 100.0 | 100.0 | |

Source: Survey Results

84 out of 202 managerial employees are in the 31-40 age group. This represents 41.6% of the total managerial participants. Only 12 managerial employees are above 51 years old.

Table 5.16 details the number of years the managerial employee has spent with their respective organisations.

**Table 5.16: Descriptive Statistics for the Managerial Employees' Work Experience in their Current Organisation**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 0-1 years | 43 | 21.3 | 21.3 | 21.3 |
| | 2-5 years | 107 | 53.0 | 53.0 | 74.3 |
| | 6-10 years | 40 | 19.8 | 19.8 | 94.1 |
| | 11-15 years | 3 | 1.5 | 1.5 | 95.5 |
| | 16 years and above | 9 | 4.5 | 4.5 | 100.0 |
| | Total | 202 | 100.0 | 100.0 | |

Source: Survey Results

More than half of the participants have spent between 2 to 5 years with their companies. 4.5 % have spent above 15 years with their company.

Table 5.17 shows the descriptive Statistics for previous work experience of the managerial staff before joining their current company.

**Table 5.17: Previous Work Experience of the Managerial Staff**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | My first job | 39 | 19.3 | 19.3 | 19.3 |
| | 1-5 years | 122 | 60.4 | 60.4 | 79.7 |
| | 6-10 years | 24 | 11.9 | 11.9 | 91.6 |
| | 11-15 years | 12 | 5.9 | 5.9 | 97.5 |
| | 16 years and above | 5 | 2.5 | 2.5 | 100.0 |
| | Total | 202 | 100.0 | 100.0 | |

Source: Survey Results

39 managers out of the 202 participating managerial staff had no previous work experience. 122 managerial employees had previous work experience of between 1 and 5 years while only 17 managers had well over 10 years of work experience before joining their current organisation.

Table 5.18 and Table 5.19 respectively show the descriptive statistics of academic and professional qualifications of the managerial staff.

**Table 5.18: Managers' Highest Academic Qualifications**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | WAEC / SSCE / GCE / NECO | 23 | 11.4 | 11.4 | 11.4 |
| | Ordinary National Diploma (OND) | 15 | 7.4 | 7.4 | 18.8 |
| | Higher National Diploma (HND) | 30 | 14.9 | 14.9 | 33.7 |
| | Bachelor Degree | 87 | 43.1 | 43.1 | 76.7 |
| | Masters Degree | 45 | 22.3 | 22.3 | 99.0 |
| | Doctoral Degree | 2 | 1.0 | 1.0 | 100.0 |
| | Total | 202 | 100.0 | 100.0 | |

Source: Survey Results

43.1% of the managerial employees had a bachelor degree while 22.3% had a master degree. Only two managers had a doctoral degree.

**Table 5.19: Managers' Professional Qualifications**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | No professional qualification | 144 | 71.3 | 71.3 | 71.3 |
| | Additional Professional qualification(s) obtained | 58 | 28.7 | 28.7 | 100.0 |
| | Total | 202 | 100.0 | 100.0 | |

Source: Survey Results

58 out of the 202 participating managers had at least one additional professional qualification, as shown in Table 5.19.

Table 5.20 shows the summary of the two methods used in collecting the managerial staff questionnaires.

**Table 5.20: Survey Methods (Managerial Staff)**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Online Questionnaire | 96 | 47.5 | 47.5 | 47.5 |
| | Paper Questionnaire | 106 | 52.5 | 52.5 | 100.0 |
| | Total | 202 | 100.0 | 100.0 | |

Source: Survey Results

96 managers completed the survey via the online method while 106 managers completed the paper survey.

Table 5.21 shows that 51% of the managerial employees are from service organisations while the remaining 49% are from manufacturing organisations.

**Table 5.21: Company Type (Managerial Staff)**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Manufacturing | 99 | 49.0 | 49.0 | 49.0 |
| | Service | 103 | 51.0 | 51.0 | 100.0 |
| | Total | 202 | 100.0 | 100.0 | |

Sources: Survey Results

Table 5.22 reveals that participating managerial employees are from companies located in seven states and the Federal Capital Territory.

**Table 5.22: Company Geographical Location (Managerial Employees)**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Abuja | 6 | 3.0 | 3.0 | 3.0 |
| | Kaduna | 5 | 2.5 | 2.5 | 5.4 |
| | Kogi | 2 | 1.0 | 1.0 | 6.4 |
| | Lagos | 113 | 55.9 | 55.9 | 62.4 |
| | Ogun | 28 | 13.9 | 13.9 | 76.2 |
| | Ondo | 11 | 5.4 | 5.4 | 81.7 |
| | Osun | 32 | 15.8 | 15.8 | 97.5 |
| | Oyo | 5 | 2.5 | 2.5 | 100.0 |
| | Total | 202 | 100.0 | 100.0 | |

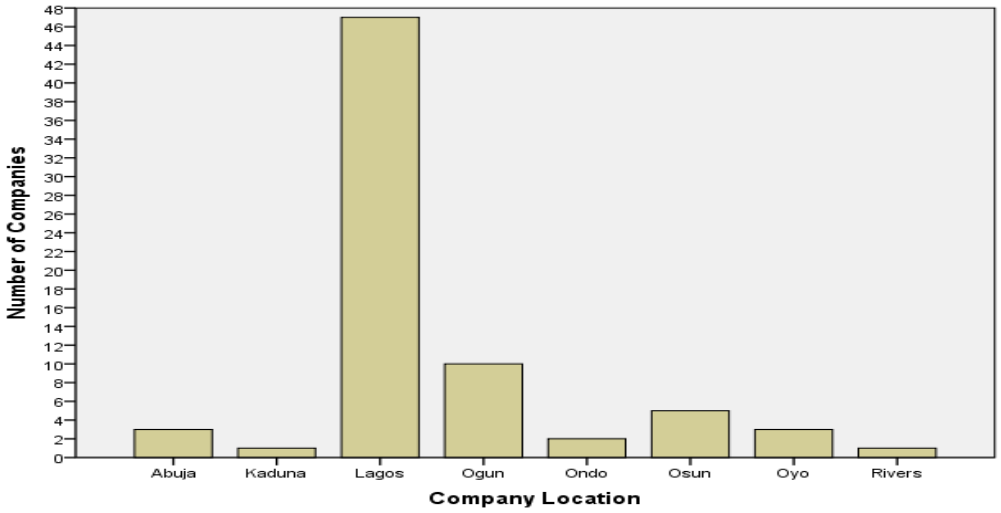
Sources: Survey Results

113 out of the 202 managers are from Lagos State. This implies that more than half of the participating managers are from Lagos State, the commercial capital of Nigeria. There are only few participants from Abuja, Kaduna, Kogi and Oyo States.

### 5.2.3 Company Level Attributes for the Shop-floor Staff Survey

Figure 5.1 shows the breakdown of shop-floor employee participation by location.

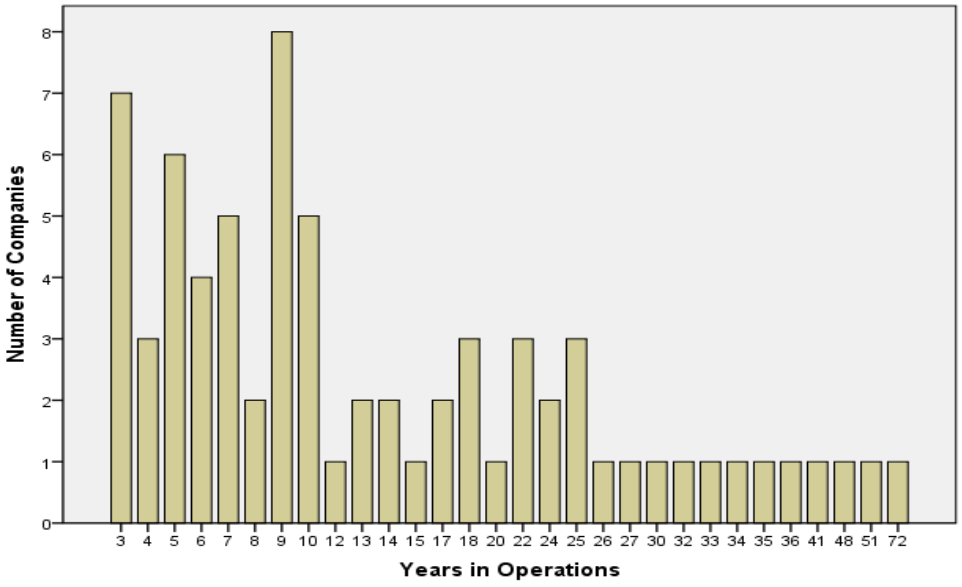
**Figure 5.1: Location of Companies (Shop-floor Staff)**




47 of these companies are located in Lagos State, 10 companies are located in Ogun State. Figure 5.2 presents the number of years in operation for the 72 companies.

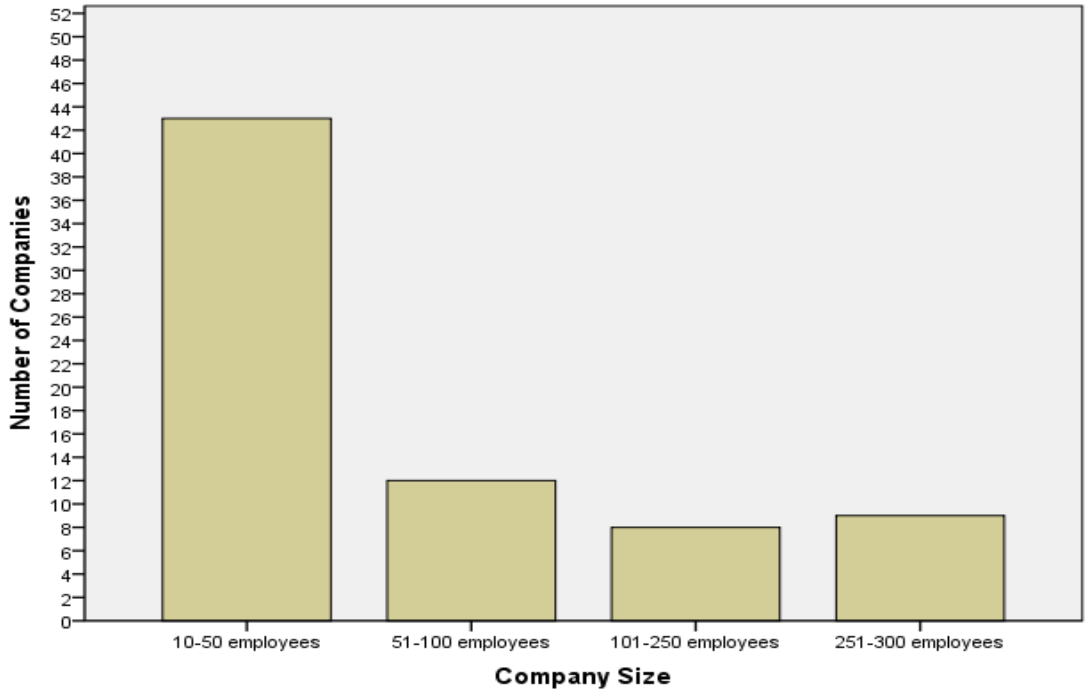
**Figure 5.2: Years in Operation by Company (Shop-floor Staff Survey)**

7



companies started operations in the last three years. The oldest company started operations 72 years ago. Figure 5.3 shows the size of the participating companies with respect to the number of employees.

**Figure 5.3: Company Size (Shop-floor Staff Survey)**




43 out of 72 organisations that participated in the shop-floor survey have between 10 and 50 employees. Table 5.23 summarises the participating organisations in the shop-floor staff survey by company type. In sum, there are 28 manufacturing organisations and 44 service organisations in the shop-floor staff survey.

**Table 5.23: Company Type (Shop-floor Staff Survey)**

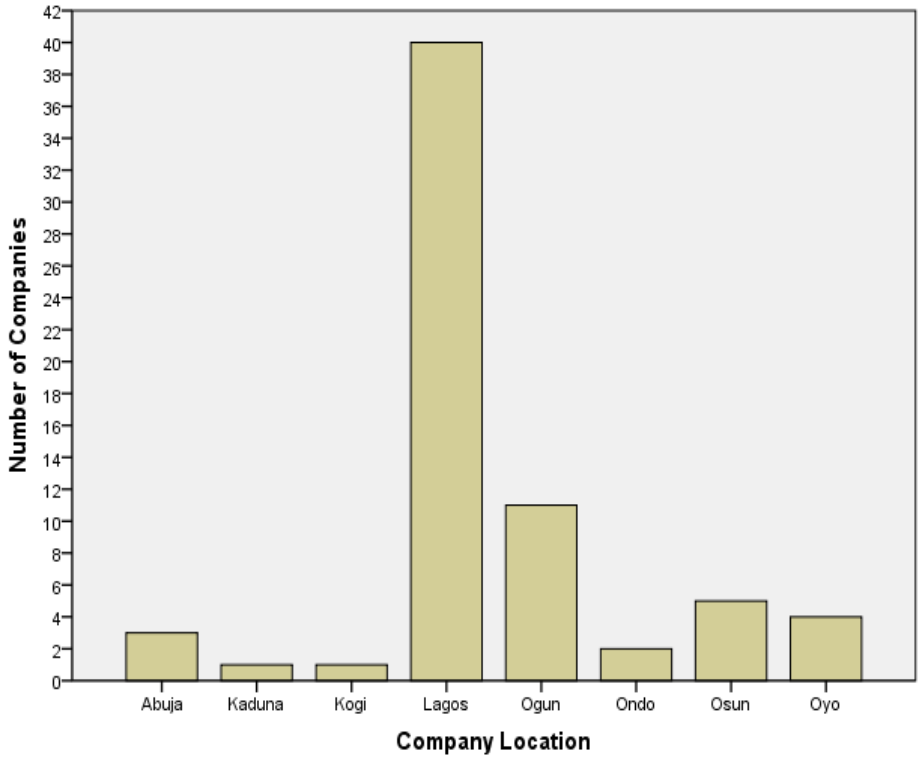
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Manufacturing | 28 | 38.9 | 38.9 | 38.9 |
| | Service | 44 | 61.1 | 61.1 | 100.0 |
| | Total | 72 | 100.0 | 100.0 | |

Source: Survey Results

### 5.2.4 Company Level Attributes for the Managerial Staff Survey

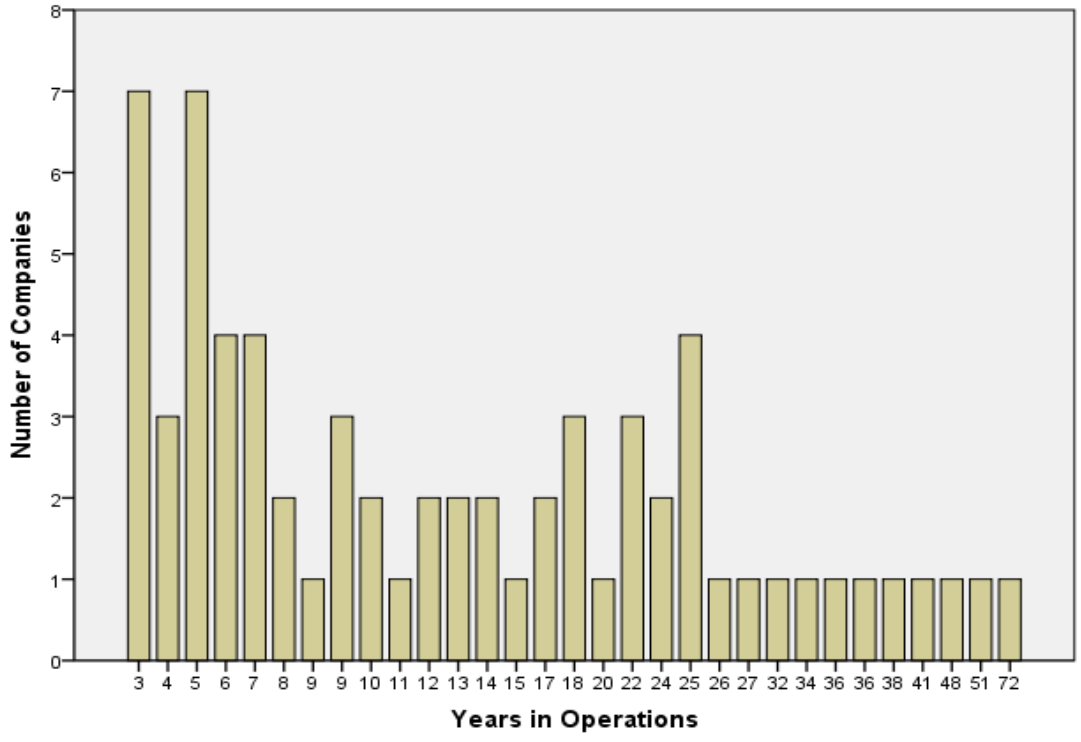
Figure 5.4 shows the breakdown of managerial staff participation by location.

**Figure 5.4: Location of Companies (Managerial Staff Survey)**



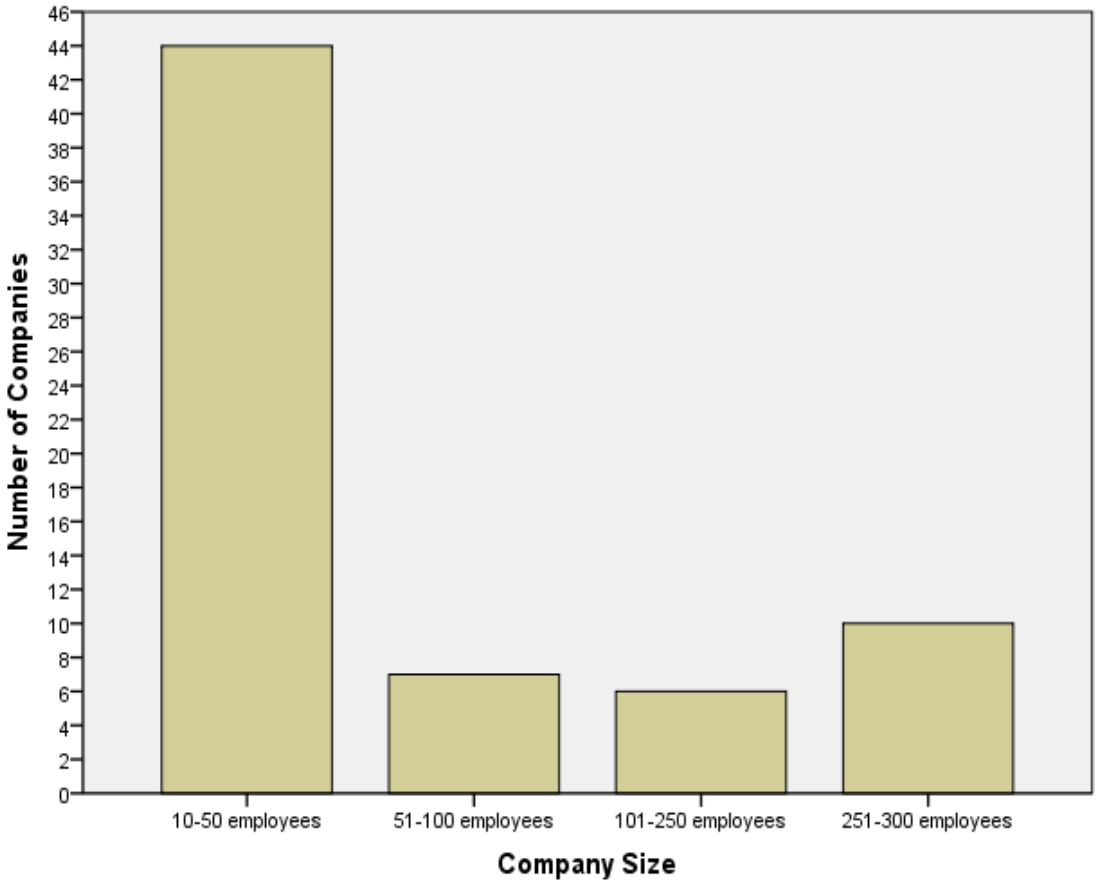

40 of these companies are located in Lagos State, 11 companies are located in Ogun State. Figure 5.5 presents the number of years in operation by company.

**Figure 5.5: Years in Operation by Company (Managerial Staff Survey)**



25.4% of the companies started operations in the last five years. The oldest company started operations 72 years ago. Figure 5.6 shows the size of the participating companies with respect to the number of employees.

**Figure 5.6: Company Size (Managerial Staff Survey)**




44 out of the 67 organisations have between 10 and 50 employees. Table 5.24 summarises the participating organisations in the managerial staff survey by company type; there are 29 manufacturing organisations and 38 service organisations.

**Table 5.24: Company Type (Managerial Staff Survey)**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Manufacturing | 29 | 43.3 | 43.3 | 43.3 |
| | Service | 38 | 56.7 | 56.7 | 100.0 |
| | Total | 67 | 100.0 | 100.0 | |

Source: Survey Results

## 5.3 Descriptive Statistics for the Variables in the Shop-floor Survey

This section summarises shop-floor employees' responses to the core research items and variables. This provides more understanding about how the shop-floor staff responded to the survey items.

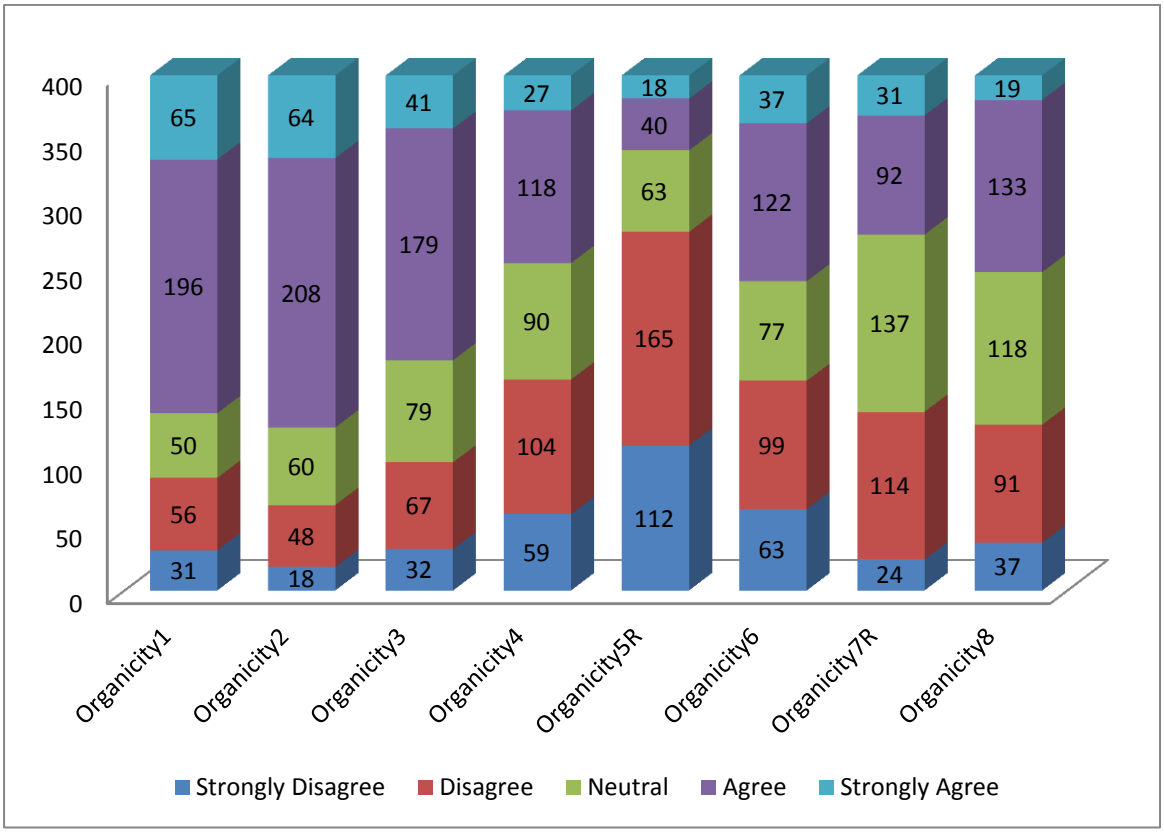
### 5.3.1 Employee Working Environment

23 items from four different organisational context variables (Organisational Structure, Clan Culture, Adhocracy Culture and Knowledge Sharing Culture) were used to measure the internal working environment of the organisations, as detailed earlier in section 3.4.3. Using a five-point scale ranging from 'Strongly Disagree' to 'Strongly Agree', respondents were asked to indicate their extent of agreement to each of the item statements. Survey items examined the management philosophy of the organisations with respect to organisational structure and culture. Results measuring the employee working environment are presented in the following sections.

#### 5.3.1.1 Organisational Structure

Organic Structure is a feature of organisations that show a more fluid set of arrangements to the running of the organisations. Such arrangements are suitable to conditions of rapid change in the business environment (Lam, 2011). Eight items were used to investigate this variable in this survey. Figure 5.7 shows the descriptive analysis of the responses measuring the organic structure variable: organicity. Responses to the first three items tend towards the "agree" side of the scale. Responses to the last five items tend towards the "disagree" side of the scale. This finding reveals that a mixture of organic and mechanistic organisations participated in the survey. As detailed earlier is section 2.16.1, mechanistic organisations tend to be more rigid, hierarchical and suited to a stable and predictable environment, while organic organisations show a more fluid set of arrangements which are suitable to conditions of rapid change and innovation (Lam, 2011).

**Figure 5.7: Responses for Organic Structure Items**




**Note:**

Organicity1: Encourages open channels of communication between the staff and the management.

Organicity2: Promotes information sharing among the employees

Organicity3: Allows me to apply my initiatives as circumstances demand

Organicity4: Encourages making the best decisions even if it requires bypassing formal rules temporarily

Organicity5: Ensures employees stick to formally laid down procedures

Organicity6: Encourages employee participation in the decision making process

Organicity7: Sticks firmly to its past methods of operations

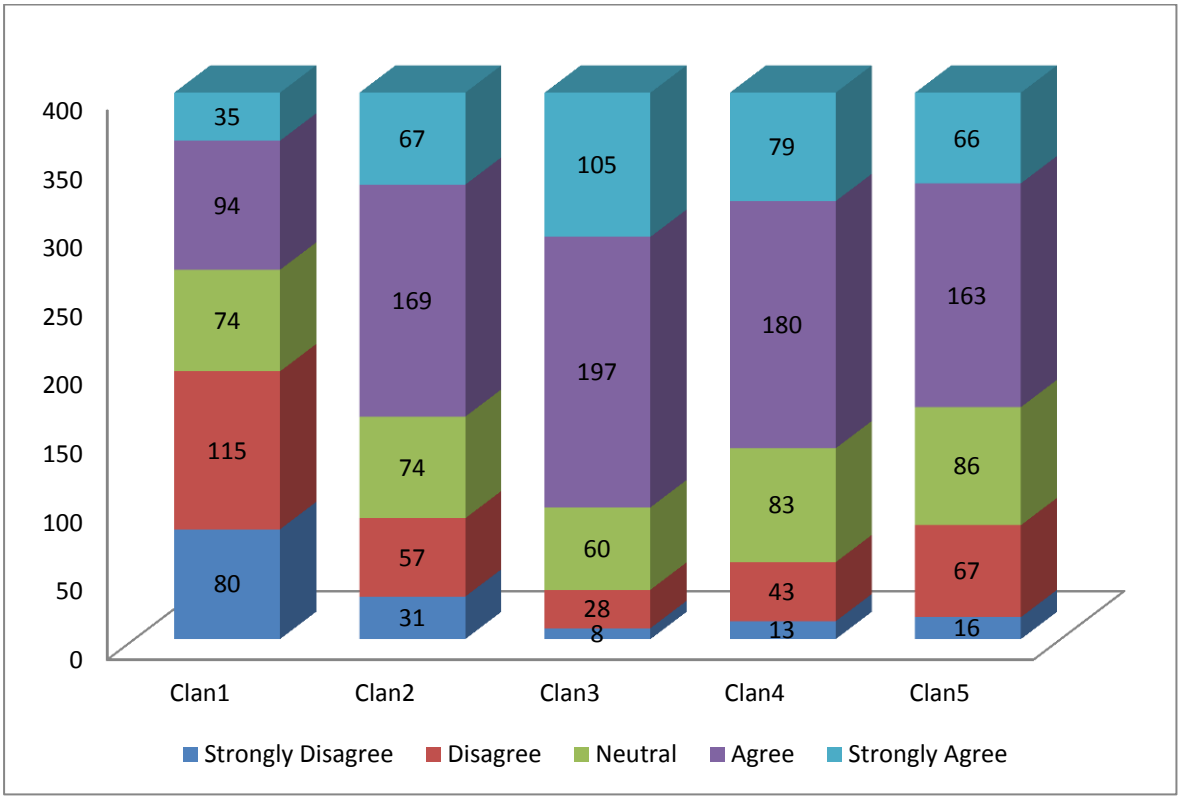
Organicity8: Encourages operating styles that range freely from the very formal to the very informal

R: Negatively worded items, responses are reversed during the analysis.

### 5.3.1.2 Clan Culture

Clan Culture is a feature of a family-type organisation. Such organisations focus on teamwork; employee involvement; employee empowerment; corporate commitment towards employees' well-being; and creation of a friendly working environment (Cameron and Quinn, 2006). Figure 5.8 shows the descriptive analysis of the responses measuring the Clan Culture variable.

**Figure 5.8: Responses for Clan Culture Items**




**Note:**

Clan 1: My Company is like an extended family where I feel free to discuss my personal issues.

Clan 2: I see my leader as a mentor.

Clan 3: The Company encourages the employees to work as a team.

Clan 4: Group loyalty holds this company together.

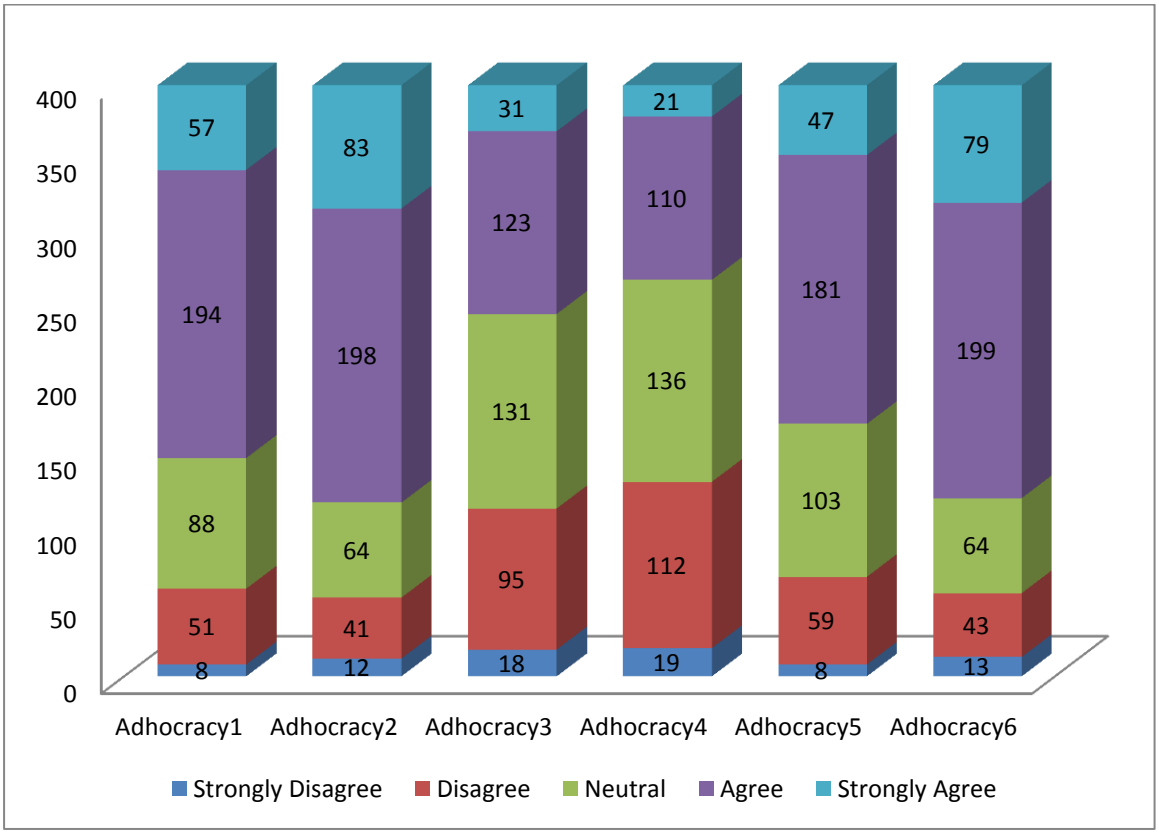
Clan 5: There is a strong concern for employee growth and development in this company.

Apart from item 1, the responses for Clan Culture are concentrated on the agree side of the scale. The result is rational, as the participating organisations are small and medium-sized. Family-like features are likely to be dominant.

### 5.3.1.3 Adhocracy Culture

An adhocracy Culture encourages creativity and flexibility in the day-to-day running of an organisation. It is characterised by rapid reconfiguration to suit new circumstances, thereby allowing organisation to take maximum advantage of new business opportunities (Cameron and Quinn, 2006). Figure 5.9 shows analysis of the responses measuring the Adhocracy Culture variable.

**Figure 5.9: Responses for Adhocracy Culture Items**




**Note:**

Adhocracy 1: The Company is a very creative place to work

Adhocracy 2: The leadership in this company encourages learning new things

Adhocracy 3: The leadership in this company encourages doing things that lack immediate benefits

Adhocracy 4: The management style in the company is characterised by individual risk taking

Adhocracy 5: Commitment to creativity holds this company together

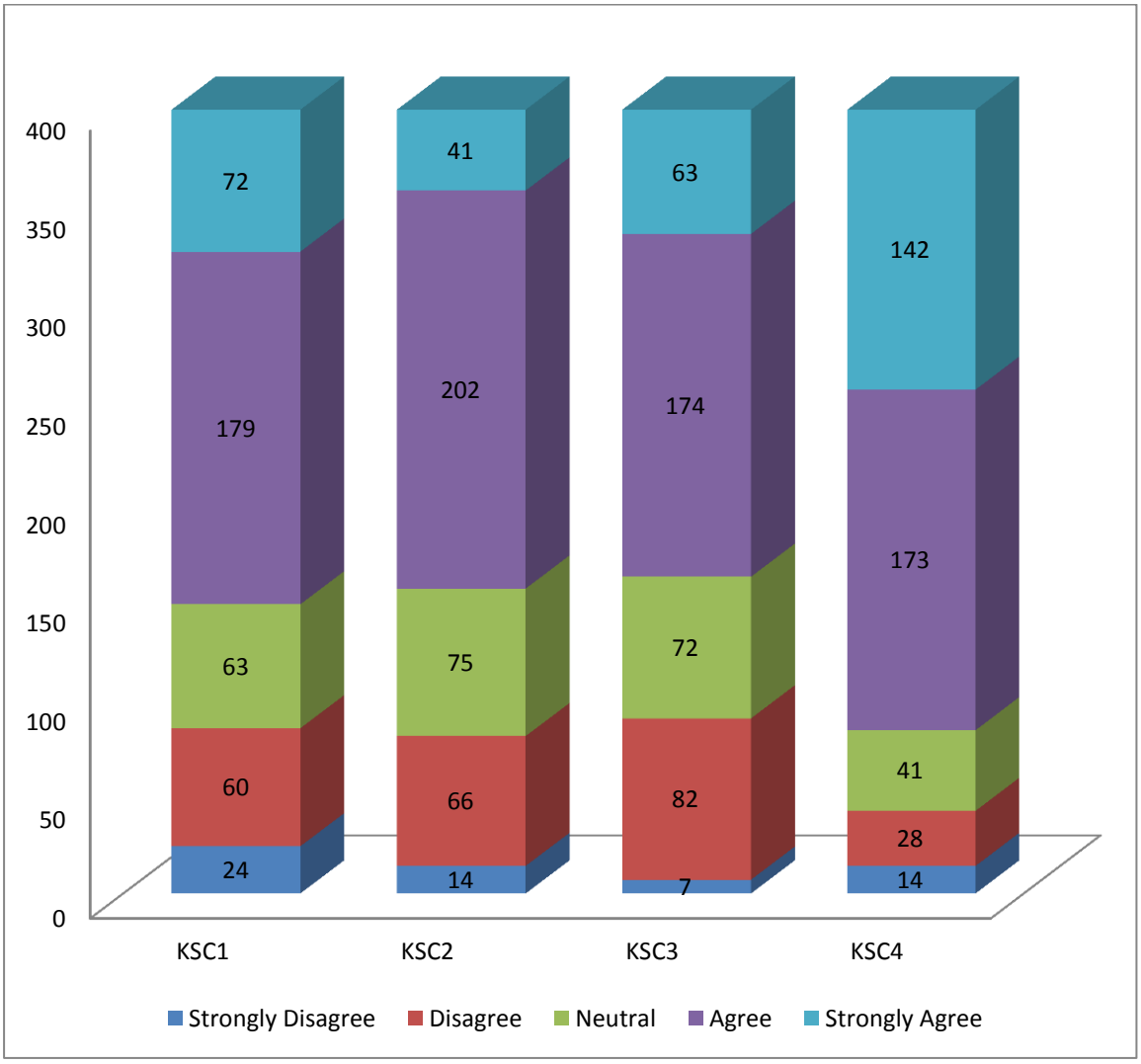
Adhocracy 6: Emphasis is on producing unique and new products

Responses for items 1, 2, 5 and 6 tend towards the agree side of the scale.

### 5.3.1.4 Knowledge Sharing Culture

A Knowledge Sharing Culture (KSC) promotes information sharing and creativity among the employees and also encourages organisational ambidexterity (Lin and McDonough, 2011; Menzel et al., 2008; Ahmed, 1998; Amabile et al., 1996; Damanpour, 1991). Figure 5.10 shows the breakdown of responses measuring the Knowledge Sharing Culture variable. The responses tend towards the agree side of the scale. For example, 315 out of 398 participants are on the agree side of the scale for item 4. In item 1, 72 employees strongly agreed while 179 employees agreed that knowledge is widely shared in their companies.

**Figure 5.10: Responses for Knowledge Sharing Culture**




**Note:**

KSC1: Knowledge is widely shared in this company.

KSC2: This company emphasises openness among the employees.

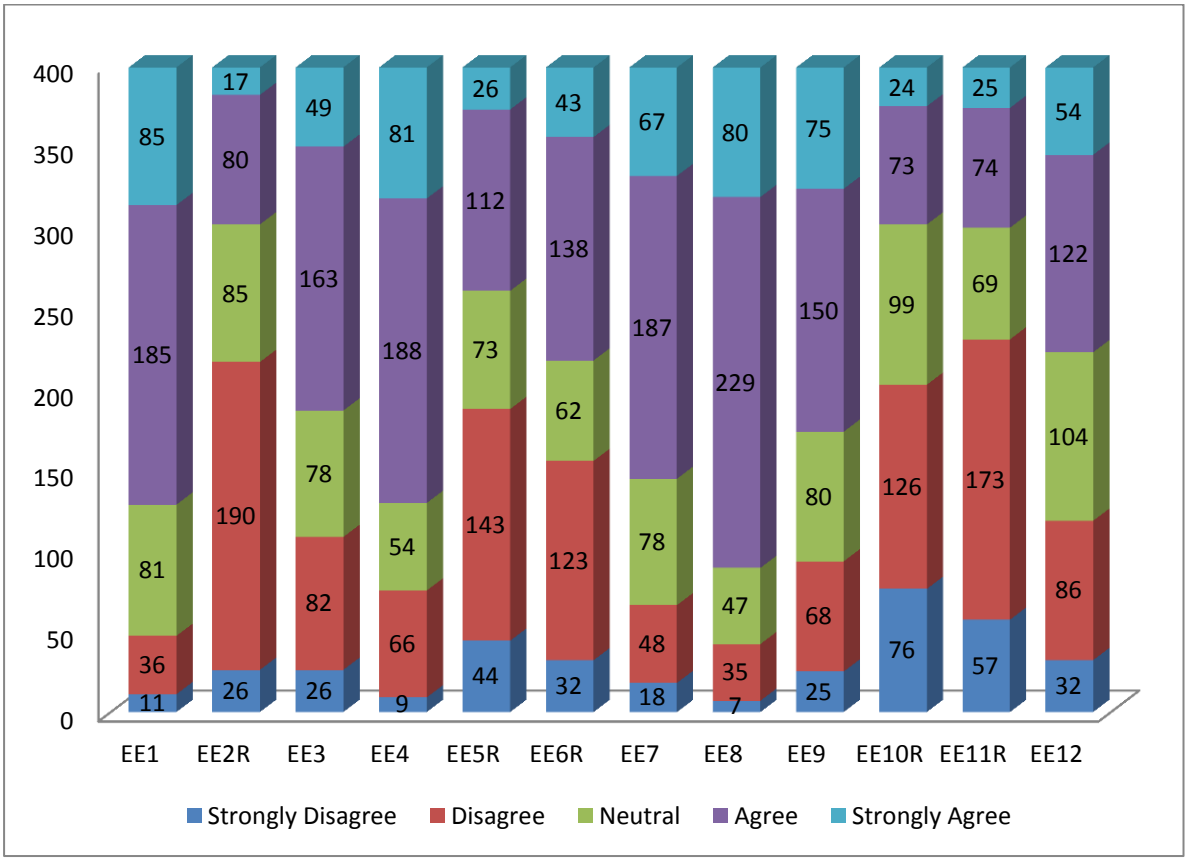
KSC3: Mutual trust is very important in this company.

KSC4: Respect among the employees is very important in this company.

### 5.3.2 Employee Level of Engagement

Twelve items from Vance (2006) and Lockwood (2007) were adapted measure the level of employee engagement (EE) in their respective companies. Figure 5.11 shows the breakdown of responses to the items measuring the employee level of engagement.

**Figure 5.11: Responses for Employee Level of Engagement**




**Note:**

EE1: I am personally proud of my company.
EE2: I am not totally satisfied with every activity in my company.
EE3: I am satisfied with every activity that relates to my job.
EE4: I have the opportunity to perform well at my work.
EE5: I do not always receive praise and positive feedback for my contributions.
EE6: I do not have enough personal support from my supervisor.
EE7: My effort is always far above and beyond the minimum.
EE8: I understand the links between my job and the company's goals.
EE9: My prospect for future growth with this company is high.
EE10: I do not have any intention to stay with this company for long time.
EE11: Sometimes I think of other things when doing my job.
EE12: Sometimes I am so engrossed by job that I lose track of time.
R: Negatively worded items, responses are reversed during the analysis.

Responses reveal that 47 out of 398 shop-floor employees do not feel proud of their companies (EE1), while more than 50% of the participants are not totally satisfied with every activity in their company (EE2). 254 respondents believe that their effort is always far above the required minimum (EE7) and 309 respondents have a good understanding of the links between their roles and their organisational goals (EE8).

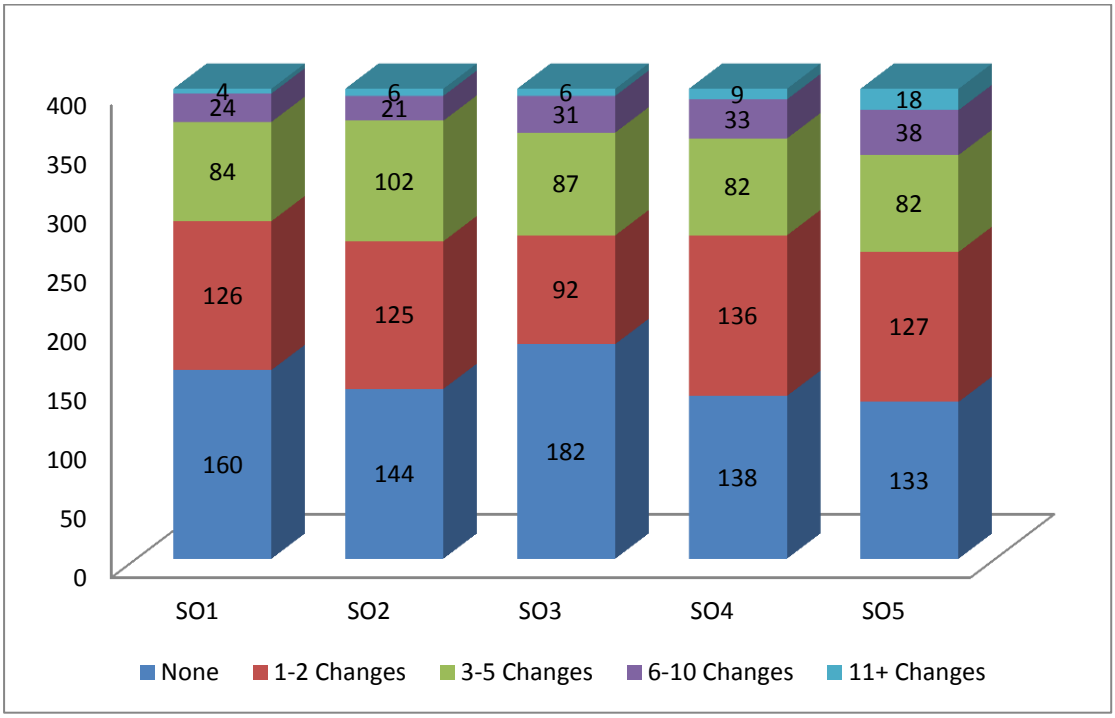
### 5.3.3 Shop-floor Employee Ambidexterity

In order to accurately capture individual ambidexterity at the shop-floor level, the two dimensions used are (1) Suggestion and Implementation Orientation and (2) Employee Personal Development Strategy and its Organisational Relevance Orientation. Both orientations of the variable focus on measuring the ability of the employees to effectively identify and combine the present needs and the future needs of their organisations.

#### 5.3.3.1 Suggestion-Implementation Orientation

Figure 5.12 shows analysis of responses measuring the employee's suggestion orientation (SO).

**Figure 5.12: Number of Changes proposed by the Employees**

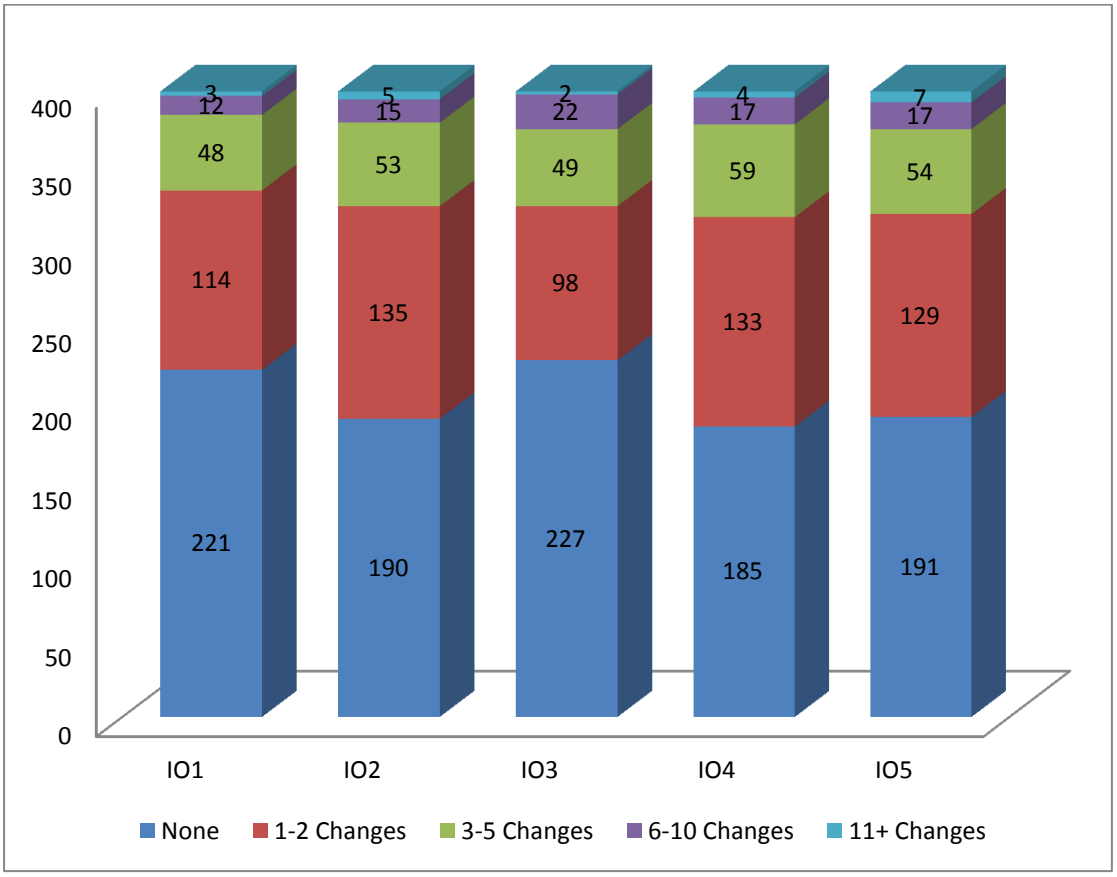



**Note:** Number of suggestions towards:
SO1: New targets or objectives.
SO2: New working methods or techniques.
SO3: New products or product improvements.
SO4: New methods to achieve work targets.
SO5: New information to any aspect of your work.

Figure 5.12 shows the number of changes proposed by employees within twelve months to five different aspects of the company. Responses indicate that the more the number of changes proposed, the less the number of employees who were involved.

Figure 5.13 shows the analysis of the responses measuring the number of employee's suggestion implemented (IO) over a twelve-month period with respect to five different aspects of the company.

**Figure 5.13: Number of Changes Implemented**




**Note:** Number of implemented suggestions that affect:

IO1: New targets or objectives.

IO2: New working methods or techniques.

IO3: New products or product improvements.

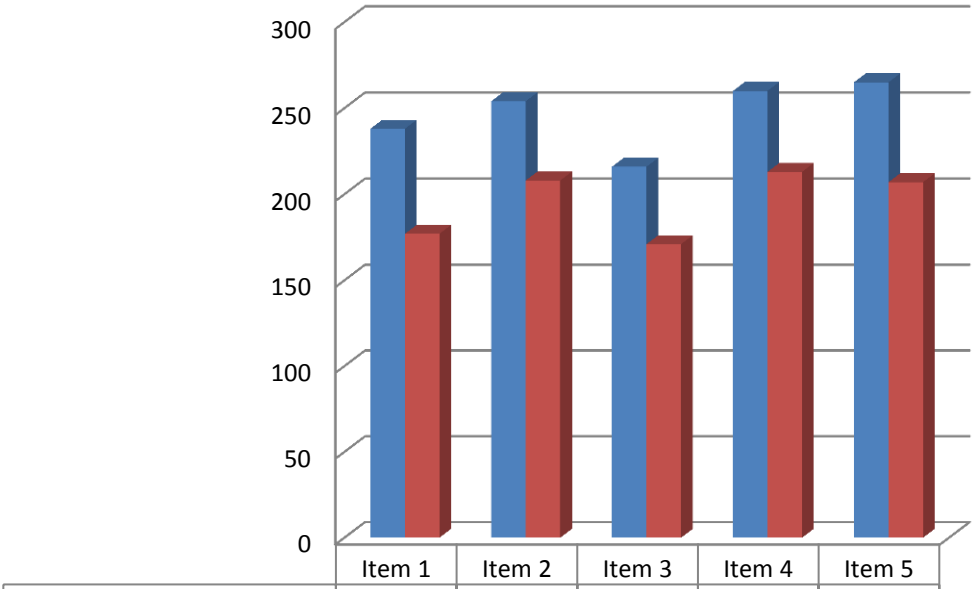
IO4: New methods to achieve work targets.

IO5: New information to any aspect of your work.

Responses indicate that the more the number of changes implemented, the less the number of employees who were involved.

Figure 5.14 provides a breakdown of the number of employees who proposed at least one change by suggestions implemented in each of the five aspects (items 1 to 5).

**Figure 5.14: Employee Suggestion and Implementation**




| | Item 1 | Item 2 | Item 3 | Item 4 | Item 5 |
|---|---|---|---|---|---|
| Number of Employees who proposed at least one change | 238 | 254 | 216 | 260 | 265 |
| Number of Employees with at least one implemented suggestion | 177 | 208 | 171 | 213 | 207 |

**Note:**

Item 1: New targets or objectives

Item 2: New working methods or techniques

Item 3: New products or product improvements

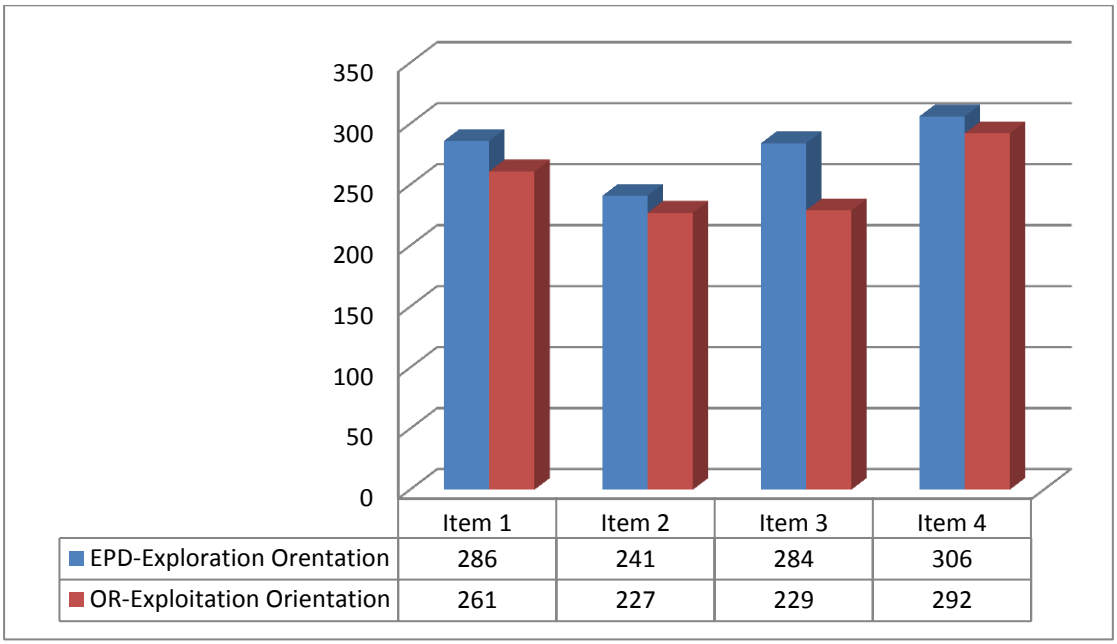
Item 4: New methods to achieve work targets

Item 5: New information to any aspect of your work

### 5.3.3.2 Employee Personal Development Strategy and its Organisational Relevance Orientation

Based on the description of contextual ambidexterity, four items were used to investigate this orientation. Figure 5.15 compares the Employee Personal Development (EPD) strategy and its Organisational Relevance (OR) for each of the items. 286 of 398 respondents personally searched for new and better ways of doing their job, and 91.2% of them indicated that this had been of immediate benefit to their company (item 1).

**Figure 5.15: Employee Personal Development Strategy (EPD) and its Organisational Relevance (OR)**




**Note:**

EPD: Employee Personal Development

OR: Organisational Relevance

Item 1: Within the last one year, have you personally searched for new and better ways of doing your job?

Item 2: Within the last one year, have you personally engaged in activities that need you to change the way you work?

Item 3: Within the last one year, have you undertaken activities that need you to learn new skills or gain knowledge?

Item 4: Within the last one year, have you personally identified way(s) to do your work better?

For item 2, 241 employees personally engaged in activities that changed the way they used to work, and 94.2% of them indicated that this had been of immediate benefit to their company. 284 employees personally undertook activities that required them to learn new skills or gain knowledge, and 80.6% of them found these activities to be of immediate benefit to their company. For item 4, 306 employees personally identified ways to do their work better and 95.4% of them indicated that this had been of immediate benefit to their company.

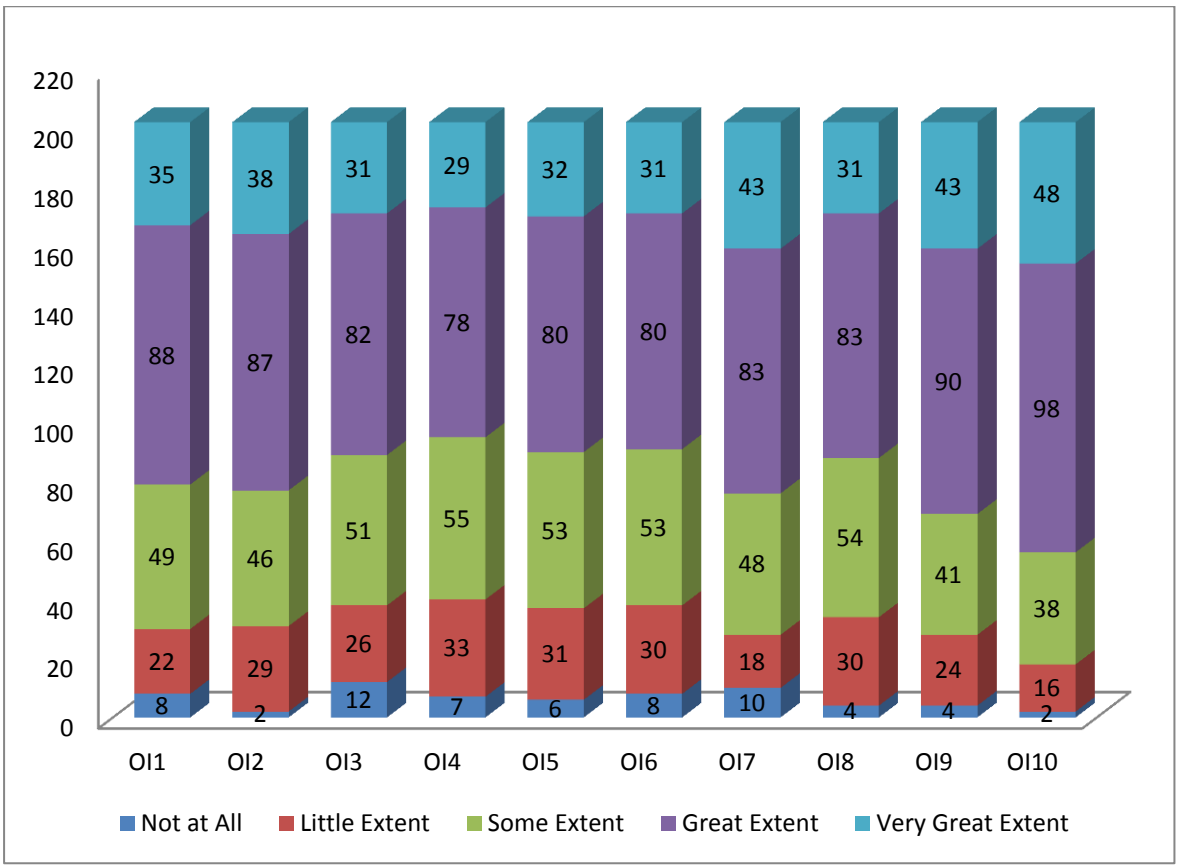
## 5.4 Descriptive Statistics for the Variables in the Managerial Survey

This section summarises the managerial employees' responses to the core research items and variables. It provides more understanding about how the managerial staff responded to the survey items.

### 5.4.1 Organisational Innovation Capability Variable

Ten items were used to measure the variable. The variable examined management's strategic decisions in the implementation of new organisational methods. Figure 5.16 shows the descriptive analysis of the responses to the items measuring Organisational Innovation (OI) Capability.

**Figure 5.16: Responses for Items in Organisational Innovation Capability**




**Note:**

OI1: Implemented new methods that improve flexibility of production or service provision.
OI2: Encouraged new methods that increased capacity of production.
OI3: Implemented methods that facilitated reduction in labour costs.
OI4: Implemented methods that encouraged energy and materials saving in its operation.
OI5: Implemented methods that improved the working conditions.
OI6: Implemented methods that reduced production time.
OI7: Improved communication and interaction among different units.
OI8: Renewed its supply chain management system.
OI9: Introduced techniques that improved the quality of its operations.
OI10: Introduced techniques that improved the quality of its products or services.

More than 50% of the respondents tend towards the agree side of the scale for each of the items.

### 5.4.2 Marketing Innovation Capability Variable

Thirteen items were used to measure Marketing Innovation (MI) capability, which examined management's strategic decisions in the implementation of new marketing methods. Figure 5.17 shows the analysis of the responses to the items measuring MI Capability.

**Figure 5.17: Responses for Items in Marketing Innovation Capability**


**Note:**

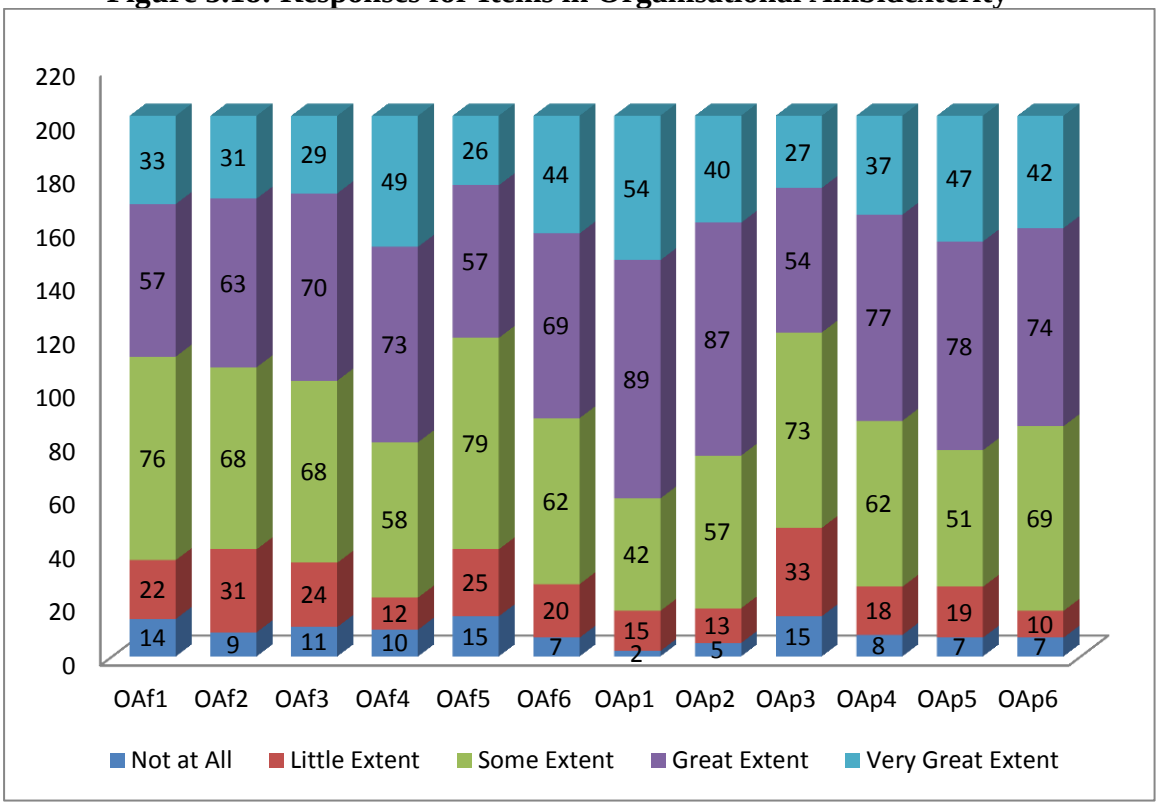
MI1: Implemented creative marketing ideas.
MI2: Implemented improvements that promoted its products or services to its customers.
MI3: Penalised staff for new marketing ideas that did not work.
MI4: Implemented improvements in product pricing.
MI5: Viewed new marketing ideas as too risky.
MI6: Made conscious effort to enter new markets.
MI7: Resisted new marketing ideas.
MI8: Readily accepted improvements in product promotional activities.
MI9: Experienced an increase in different client demands for its products or services.
MI10: Ensured continuous exposure for its products among potential customers.
MI11: Maintained cordial relationships with its customers.
MI12: Repackaged its existing products or services to make them more appealing to its customers.
MI13: Implemented methods that increased the efficiency of delivering goods or services.

Except for item MI5R, more than 50% of the respondents tend towards the agree side of the scale for each of the items.

### 5.4.3 Organisational Ambidexterity Variable

Twelve items were used to measure Organisational Ambidexterity. The first six items examined the ***explorative orientation (OAf)*** while the last six items examined the ***exploitative orientation (OAp)*** of the organisation. The managers were asked to rate their organisations over a three-year period. Figure 5.18 shows the descriptive analysis of the responses to the items measuring the variable.

**Figure 5.18: Responses for Items in Organisational Ambidexterity**



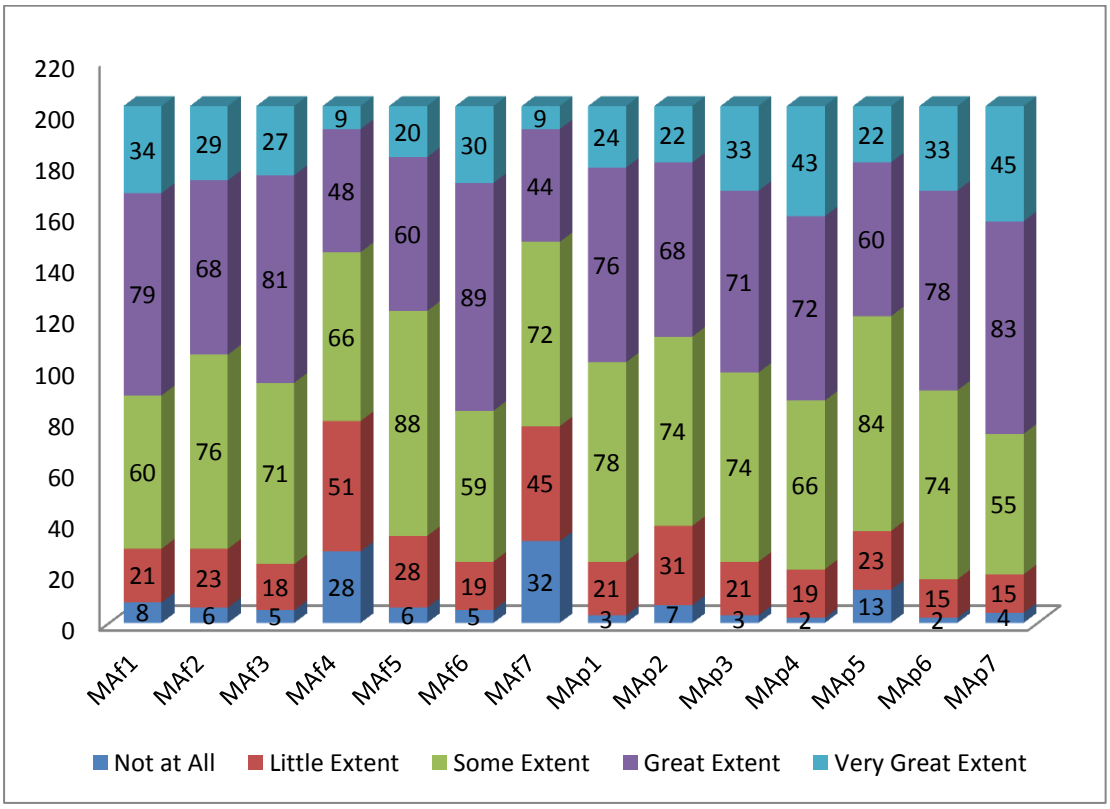

**Note:**
OAf1: Look for novel ideas by thinking "outside the box".
OAf2: Base its success on its ability to explore new technologies.
OAf3: Create products that are innovative to the company.
OAf4: Look for creative ways to satisfy its customers' needs.
OAf5: Aggressively venture into new market segments.
OAf6: Actively target new customer groups.
OAp1: Commit to improve product and service quality.
OAp2: Continuously improve the reliability of its products.
OAp3: Achieve a reduction in production cost due to increase in demand for its products and services.
OAp4: Constantly survey existing customers' satisfaction.
OAp5: Fine-tune what it offers to keep its current customers satisfied.
OAp6: Penetrate more deeply into its existing customer base.

For each of the items measured, very few respondents cited "disagree to strongly disagree".

### 5.4.4 Managerial Ambidexterity Variable

Fourteen items were used to measure Managerial Ambidexterity (MA) variable. The first seven items examined the ***explorative orientation (MAf)*** of the managerial staff while the last seven items examined their ***exploitative orientation (MAp)***. The managers were asked to rate themselves over a twelve-month period. Figure 5.19 shows analysis of the responses to the items measuring the two dimensions of the MA variable.

**Figure 5.19: Responses for Items in Managerial Ambidexterity**



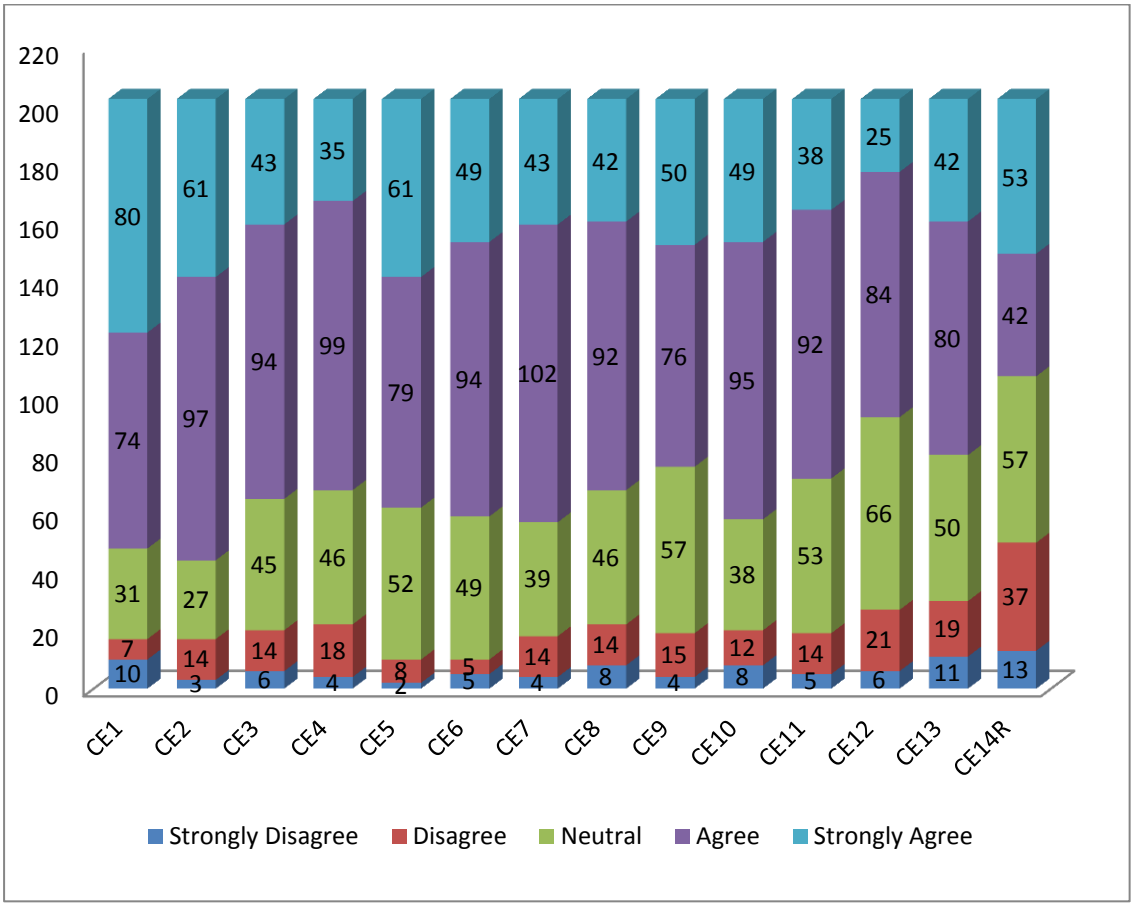

**Note:**
MAf1: Searching for new possibilities with respect to products, processes or markets.
MAf2: Evaluating diverse options with respect to products, processes or markets.
MAf3: Focusing on strong renewal of products or processes.
MAf4: Activities of which the associated benefits to your organisation are currently unclear.
MAf5: Activities requiring quite some adaptability of you.
MAf6: Activities requiring you to learn new skills or knowledge.
MAf7: Activities that are not yet in company policy.
MAp1: Activities of which a lot of experience has been accumulated by you.
MAp2: Activities which you carry out as if it were routine.
MAp3: Activities which serve existing customers with existing products.
MAp4: Activities of which it is clear to you how to conduct them.
MAp5: Activities which primarily focus on achieving short-term goals.
MAp6: Activities which you can properly conduct by using your present knowledge.
MAp7: Activities which clearly fit into existing company policy.

Except for items MAf4 and MAf7, less than 40 respondents cited "Not at all" and Little Extent" for the other twelve items of the variable.

### 5.4.5 Customer Engagement Variable

Fourteen items were used to measure Customer Engagement (CE). Figure 5.20 shows analysis of the responses for each of the items.

**Figure 5.20: Responses for Items in Customer Engagement**




**Note:**

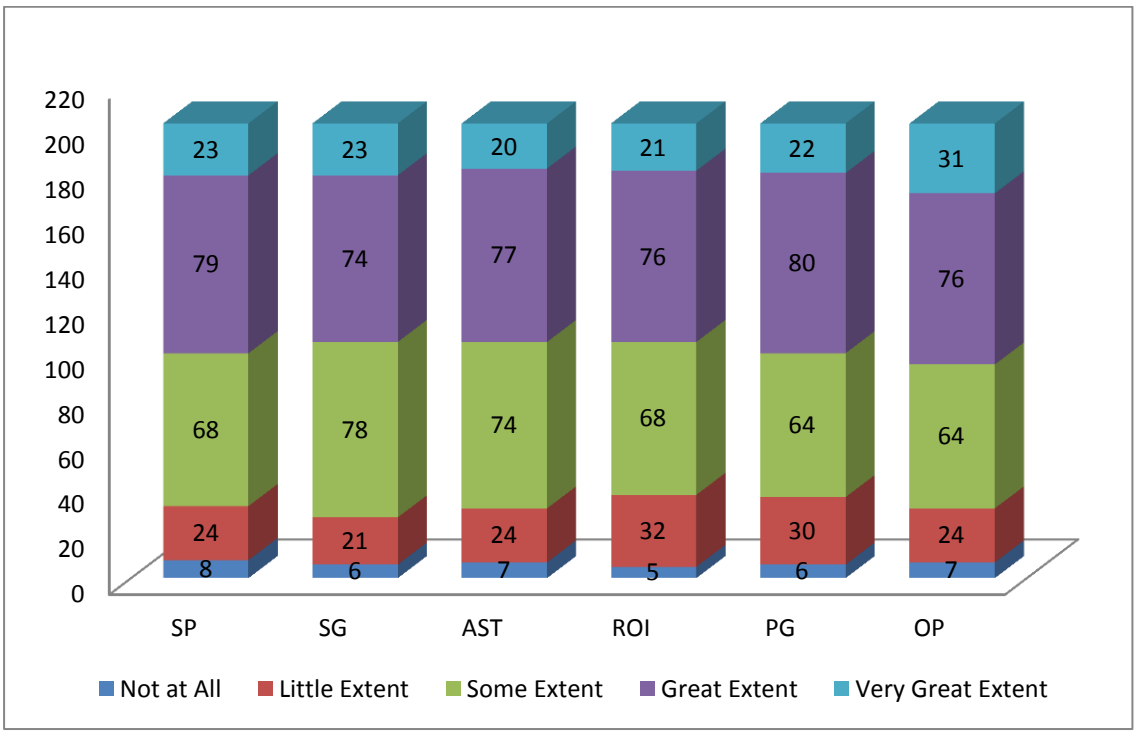
CE1: The company has an established relationship with the customers.
CE2: The company fully understands the needs of the customers.
CE3: There is an open invitation for constructive criticism from the customers.
CE4: The company often receives constructive criticisms from the customers.
CE5: The company follows clients' complaints through to a logical conclusion.
CE6: The company gets new customers via referral from current customers.
CE7: There are evidences that our customers discuss about our business activities with potential customers.
CE8: The management often send messages and greetings to the customers.
CE9: The company provides after sale supports for its customers.
CE10: The company often requests for customer feedback.
CE11: The company receives solicited feedback from the customers.
CE12: The company receives unsolicited feedback from the customers.
CE13: The company meets with the customers to determine their future needs.
CE14: It has been long since we had one-on-one discussion with our key customers.

Although there were few respondents who indicated low customer engagement, Figure 5.20 shows that most of the managerial staff responses to each of the items tend towards the "agree" side of the scale.

### 5.4.6 Organisational Performance Variable

Six items were used to measure Organisational Performance, as shown in Figure 5.21.

**Figure 5.21: Responses for Items in Organisational Performance**




**Note:**
SP: Sales Performance
SG: Growth rate of sales
AST: Achievement of sales target set
ROI: Return on Investment
PG: Growth of net profit over the last three years
OP: Overall Profitability

Figure 5.21 shows that less than 40 responses are on the "disagree" side of the scale for each of the items measured.

## 5.5 Preliminary Data Analysis: Factor Analysis

Factor analysis investigates and extracts factors from research variables in order to establish whether one or more factors underlie a large number of variables (Brace et al., 2006). Exploratory Factor Analysis (EFA) is concerned with the number of factors necessary to explain the relationships among a set of variables and is used in cases

where the underlying factors structure of a set of data is unknown (Hair et al., 2006). Confirmatory Factor Analysis (CFA) is employed to determine if the factor structure present in the research data matches the predicted structure on the basis of the pre-established theory (Sharma, 1996). According to Hair et al. (2006), CFA can be used to determine construct validity because it enables the estimation of reliability coefficients, factor loadings, and variance to be extracted. Both EFA and CFA were used for this research study because of the modifications to the adapted survey items and the proposed measures for the Contextual Individual Ambidexterity of shop-floor employees and customer engagement.

EFA employs two types of test statistics to determine the usefulness and validity of factor analysis: the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy; and Bartlett's Test of Sphericity. The KMO measure of sampling adequacy reveals the amount of variance within the data that could be explained by underlying factors. As a measure of factorability: a KMO value of below 0.5 is unacceptable; 0.5 is poor; 0.6 is acceptable; and a value closer to 1 is better (Brace et al., 2006). Bartlett's test shows that the data is factorable if the p-value is less than 0.05 (Brace et al., 2006). In addition, the extracted components should account for a recommended minimum of 60% variance.

### 5.5.1 Factor Analysis for Organic Structure Measurement

The data were analysed for all the eight items by means of a principal component analysis, with varimax rotation. Two items were dropped after the initial analysis because of a problem with their residuals. For the remaining six items, the various indicators of factorability were good. Two components with an eigenvalue of greater than 1.0 and good factor loadings were found, as shown in Table 5.25.

**Table 5.25: Extracted Factors from Organic Structure Items**

**Rotated Component Matrix[a]**

| | Component | |
|---|---|---|
| | 1 | 2 |
| Organicity8 (ORG8) | .795 | |
| Organicity4 (ORG4) | .762 | |
| Organicity6 (ORG6) | .702 | |
| Organicity2 (ORG2) | | .850 |
| Organicity1 (ORG1) | | .845 |
| Organicity3 (ORG3) | | .569 |

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 3 iterations.

**Component 1: Fluidity in Decision Making (Eigenvalue = 2.872)**
Organicity8: Encourages operating styles that range freely from the very formal to the very informal.
Organicity4: Encourages making the best decisions even if it requires bypassing formal rules temporarily.
Organicity6: Encourages employee participation in the decision making process.

**Component 2: Open Communication (Eigenvalue = 1.066)**
Organicity2: Promotes information sharing among the employees.
Organicity1: Encourages open channels of communication between the staff and the management.
Organicity3: Allows me to apply my initiatives as circumstances demand.

The scree plot and total variance explained statistics, placed in appendix M1, also supported the two components. Table 5.26 shows the KMO measure of sampling adequacy and the Bartlett's test.

**Table 5.26: KMO and Bartlett's Test for Organic Structure Items**

| | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .791 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 624.139 |
| | df | 15 |
| | Sig. | .000 |

The estimated KMO (0.791), and the Bartlett's test ($p < 0.05$) indicated that the data was factorable and the analysis would generate two unique factors.

### 5.5.2 Factor Analysis for Clan Culture Measurement

The data for Clan Culture items were analysed for all the five items by means of a principal component analysis, with varimax rotation. All the items loaded to one factor. The various indicators of factorability were good and the residuals indicate that the solution was a good one. One component with an eigenvalue of greater than 1.0 and good factor loadings was found, as shown in Table 5.27.

**Table 5.27: Extracted Factors from Clan Culture Items**

**Component Matrix[a]**

| | Component |
|---|---|
| | 1 |
| Clan4 (CLA4) | .764 |
| Clan5 (CLA5) | .753 |
| Clan3 (CLA3) | .751 |
| Clan2 (CLA2) | .741 |
| Clan1 (CLA1) | .639 |

Extraction Method: Principal Component Analysis.
a. 1 components extracted.

Table 5.28 shows the KMO measure of sampling adequacy and the Bartlett's test.

**Table 5.28: KMO and Bartlett's Test for Clan Culture Items**

| | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .811 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 494.828 |
| | df | 10 |
| | Sig. | .000 |

The estimated KMO (0.811), and the Bartlett's test ($p < 0.05$) indicated that the data was factorable and the analysis would generate one unique factor. The scree plot and total variance explained statistics, placed in appendix M2, also indicated one component.

### 5.5.3 Factor Analysis for Adhocracy Culture Measurement

The data were analysed for all the six items by means of a principal component analysis, with varimax rotation. The various indicators of factorability were good. Two components with an eigenvalue of greater than 1.0 and good factor loadings were found, as shown in Table 5.29.

**Table 5.29: Extracted Factors from Adhocracy Culture Items**

| | Component | |
|---|---|---|
| | 1 | 2 |
| Adhocracy2 (ADH2) | .813 | |
| Adhocracy5 (ADH5) | .751 | |
| Adhocracy6 (ADH6) | .700 | |
| Adhocracy1 (ADH1) | .671 | |
| Adhocracy4 (ADH4) | | .813 |
| Adhocracy3 (ADH3) | | .735 |

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 3 iterations.

**Component 1: Commitment to Innovation and Creativity (Eigenvalue = 2.320)**
Adhocracy2: The leadership in this company encourages learning new things.
Adhocracy5: Commitment to creativity holds this company together.
Adhocracy6: Emphasis is on producing unique and new products.
Adhocracy1: The company is a very creative place to work.

**Component 2: Leadership Ability to manage Risks Inherent in Innovative Decisions (Eigenvalue = 1.145)**
Adhocracy4: The management style in the company is characterised by individual risk taking.
Adhocracy3: The leadership in this company encourages doing things that lack immediate benefits

The scree plot and total variance explained statistics, placed in appendix M3, also supported the two components. Table 5.30 shows the KMO measure of sampling adequacy and the Bartlett's test.

**Table 5.30: KMO and Bartlett's Test for Adhocracy Culture Items**

| | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .630 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 416.932 |
| | Df | 15 |
| | Sig. | .000 |

The estimated KMO (0.630) and the Bartlett's test (p-value < 0.05) indicated that the data was factorable and the analysis would generate two unique factors.

### 5.5.4 Factor Analysis for Knowledge Sharing Culture Measurement

The data for Knowledge Sharing Culture (KSC) were analysed for all the four items by means of a principal component analysis, with varimax rotation. All the items loaded to one factor. The various indicators of factorability were good and the residuals indicate that the solution was a good one. One component with an eigenvalue of greater than 1.0 and good factor loadings was found, as shown in Table 5.31.

**Table 5.31: Extracted Factors from Knowledge Sharing Culture Items**

| | Component |
|---|---|
| | 1 |
| Knowledge Sharing Culture 1 (KSC1) | .830 |
| Knowledge Sharing Culture 4 (KSC4) | .765 |
| Knowledge Sharing Culture 2 (KSC2) | .760 |
| Knowledge Sharing Culture 3 (KSC3) | .736 |

Extraction Method: Principal Component Analysis.
a. 1 components extracted.

Table 5.32 shows the KMO measure of sampling adequacy and the Bartlett's test. The estimated KMO (0.770) and the Bartlett's test (p-value < 0.05) indicated that the data was factorable and the analysis would generate one unique factor.

**Table 5.32: KMO and Bartlett's Test for Knowledge Sharing Items**

| | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .770 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 409.612 |
| | Df | 6 |
| | Sig. | .000 |

The scree plot and total variance explained statistics, placed in appendix M4, also indicated one component.

### 5.5.5 Factor Analysis for Employee Level of Engagement

The data for Employee Level of Engagement (EE) were analysed for all the twelve items by means of a principal component analysis, with varimax rotation. Two items (EE7 and EE12) were dropped after the initial analysis because of the problem with the residuals. For the remaining ten items, the various indicators of factorability were good. Three components with an eigenvalue of greater than 1.0 and good factor loadings were found, as shown in Table 5.33.

**Table 5.33: Extracted Factors from Employee Level of Engagement**

| | Component | | |
|---|---|---|---|
| | 1 | 2 | 3 |
| Emp_Eng4 (EE4) | .682 | | |
| Emp_Eng1 (EE1) | .676 | | |
| Emp_Eng8 (EE8) | .658 | | |
| Emp_Eng9 (EE9) | .655 | | .409 |
| Emp_Eng2R (EE2R) | | .757 | |
| Emp_Eng3 (EE3) | | .656 | |
| Emp_Eng6R (EE6R) | | .588 | |
| Emp_Eng5R (EE5R) | | .470 | |
| Emp_Eng10R (EE10R) | | | .804 |
| Emp_Eng11R (EE11R) | | | .754 |

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 7 iterations.

**Component 1: Organisational Environment and Employee Engagement (Eigenvalue = 3.540)**
EE4: I have the opportunity to perform well at my work.
EE1: I am personally proud of my company.
EE8: I understand the links between my job and the company's goals.
EE9: My prospect for future growth with this company is high.

**Component 2: Employee Job and Engagement (Eigenvalue = 1.115)**
EE2R: I am not totally satisfied with every activity in my company.
EE3: I am satisfied with every activity that relates to my job.
EE6R: I do not have enough personal support from my supervisor.
EE5R: I do not always receive praise and positive feedback for my contributions.

**Component 3: Employee Long Term Commitment (Eigenvalue = 1.028)**
EE10R: I do not have any intention to stay with this company for long time.
EE11R: Sometimes I think of other things when doing my job.

The scree plot and total variance explained statistics, placed in appendix M5, also supported the three components. Table 5.34 shows the KMO measure of sampling adequacy and the Bartlett's test.

**Table 5.34: KMO and Bartlett's Test for Employee Level of Engagement**

| | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .817 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 883.682 |
| | Df | 45 |
| | Sig. | .000 |

The estimated KMO (0.817), and the Bartlett's test ($p < 0.05$) indicated that the data was factorable and the analysis would generate three unique factors.

Eight of the ten items in Employee Level of Engagement also loaded well into a single factor as shown in Table 5.35.

**Table 5.35: Employee Level of Engagement loading to a Factor**

**Component Matrix[a]**

| | Component |
|---|---|
| | 1 |
| Emp_Eng9 | .722 |
| Emp_Eng1 | .659 |
| Emp_Eng4 | .645 |
| Emp_Eng3 | .639 |
| Emp_Eng5R | .613 |
| Emp_Eng6R | .609 |
| Emp_Eng10R | .556 |
| Emp_Eng11R | .529 |
| Emp_Eng8 | .462 |
| Emp_Eng2R | .459 |

Extraction Method: Principal Component Analysis.
a. 1 components extracted.

### 5.5.6 Factor Analysis for Shop-floor Employee Ambidexterity Items

The data were analysed for all the items for shop-floor employee ambidexterity by means of a principal component analysis, with varimax rotation. There was no indication of any problem with the residuals; other various indicators of factorability were good. Two components with an eigenvalue of greater than 1.0 and good factor loadings were found, as shown in Table 5.36.

**Table 5.36: Extracted Factors from Shop-floor Employee Ambidexterity**

**Rotated Component Matrix[a]**

| | Component | |
|---|---|---|
| | 1 | 2 |
| Passive Employee Ambidexterity PEA_Exploit3 (PEAp3) | .826 | |
| Passive Employee Ambidexterity PEA_Exploit2 (PEAp2) | .811 | |
| Passive Employee Ambidexterity PEA_Exploit4 (PEAp4) | .808 | |
| Passive Employee Ambidexterity PEA_Exploit1 (PEAp1) | .794 | |
| Passive Employee Ambidexterity PEA_Explore4 (PEAf4) | .791 | |
| Passive Employee Ambidexterity PEA_Explore3 (PEAf3) | .767 | |
| Passive Employee Ambidexterity PEA_Explore2 (PEAf2) | .762 | |
| Passive Employee Ambidexterity PEA_Explore1 (PEAf1) | .761 | |
| Passive Employee Ambidexterity PEA_Explore5 (PEAf5) | .751 | |
| Passive Employee Ambidexterity PEA_Exploit5 (PEAp5) | .750 | |
| Active Employee Ambidexterity Explore17a (AEAf4) | | .820 |
| Active Employee Ambidexterity Exploit17bi (AEAp4) | | .804 |
| Active Employee Ambidexterity Explore15a (AEAf2) | | .777 |
| Active Employee Ambidexterity Exploit15bi (AEAp2) | | .775 |
| Active Employee Ambidexterity Explore14a (AEAf1) | | .760 |
| Active Employee Ambidexterity Exploit16bi (AEAp3) | | .754 |
| Active Employee Ambidexterity Exploit14bi (AEAp1) | | .741 |
| Active Employee Ambidexterity Explore16a (AEAf3) | | .692 |

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 3 iterations.

The scree plot and total variance explained statistics, placed in appendix M6, also supported the two components. Table 5.37 shows the KMO measure of sampling adequacy and the Bartlett's test.

**Table 5.37: KMO and Bartlett's Test for Shop-floor Employee Ambidexterity**

| | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .890 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 6134.285 |
| | Df | 153 |
| | Sig. | .000 |

The estimated KMO (0.890), and the Bartlett's test ($p < 0.05$) indicated that the data was factorable and the analysis would generate two unique factors. The two factors can be identified as Passive and Active Contextual Individual Ambidexterity.

### 5.5.7 Factor Analysis for Organisational Innovation Items

The data for Organisational Innovation were analysed for all the ten items by means of a principal component analysis, with varimax rotation. All the items loaded to one factor. The various indicators of factorability were good and the residuals indicate that the solution was a good one. One component with an eigenvalue of greater than 1.0 and good factor loadings was found, as shown in Table 5.38.

**Table 5.38: Extracted Factors from Organisational Innovation Items**

**Component Matrix[a]**

| | Component |
|---|---|
| | 1 |
| Org_Inno_2 (OI2) | .846 |
| Org_Inno_5 (OI5) | .808 |
| Org_Inno_1 (OI1) | .801 |
| Org_Inno_7 (OI7) | .792 |
| Org_Inno_4 (OI4) | .789 |
| Org_Inno_9 (OI9) | .768 |
| Org_Inno_10 (OI10) | .761 |
| Org_Inno_8 (OI8) | .735 |
| Org_Inno_3 (OI3) | .707 |
| Org_Inno_6 (OI6) | .687 |

Extraction Method: Principal Component Analysis.
a. 1 components extracted.

Table 5.39 shows the KMO measure of sampling adequacy and the Bartlett's test.

**Table 5.39: KMO and Bartlett's Test for Organisational Innovation Items**

| | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .922 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 1222.082 |
| | Df | 45 |
| | Sig. | .000 |

The estimated KMO (0.922) and the Bartlett's test (p-value < 0.05) indicated that the data was factorable and the analysis would generate one unique factor. The scree plot and total variance explained statistics, placed in appendix M7, also indicated one component.

### 5.5.8 Factor Analysis for Marketing Innovation Items

The data for Marketing Innovation items were initially analysed by means of a principal component analysis, with varimax rotation. Three items (MI3R, MI5R and MI7R) were dropped after the initial analysis because of the problem with the residuals. All the remaining ten items loaded to one component factor with an eigenvalue of greater than 1.0 and good factor loadings, as shown in Table 5.40.

**Table 5.40: Extracted Factors from Marketing Innovation Items**

**Component Matrix[a]**

| | Component |
|---|---|
| | 1 |
| Mar_Inno_2 (MI2) | .825 |
| Mar_Inno_13 (MI13) | .798 |
| Mar_Inno_11 (MI11) | .784 |
| Mar_Inno_8 (MI8) | .775 |
| Mar_Inno_10 (MI10) | .752 |
| Mar_Inno_1 (MI1) | .739 |
| Mar_Inno_12 (MI12) | .732 |
| Mar_Inno_6 (MI6) | .701 |
| Mar_Inno_9 (MI9) | .685 |
| Mar_Inno_4 (MI4) | .580 |

Extraction Method: Principal Component Analysis.
a. 1 components extracted.

Other various indicators of factorability were good. The scree plot and total variance explained statistics, placed in appendix M8, also supported one factor. Table 5.41 shows the KMO measure of sampling adequacy and the Bartlett's test.

**Table 5.41: KMO and Bartlett's Test for Marketing Innovation Items**

**KMO and Bartlett's Test**

| | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .897 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 1069.392 |
| | Df | 45 |
| | Sig. | .000 |

The estimated KMO (0.897), and the Bartlett's test (p <0.05) indicated that the data was factorable and the analysis would generate one unique factor.

### 5.5.9 Factor Analysis for Organisational Ambidexterity Items

The data for Organisational Ambidexterity items were analysed by means of a principal component analysis, with varimax rotation. There was no indication of any problem with the residuals; other various indicators of factorability were good. Although two components with an eigenvalue of greater than 1.0 and good factor loadings were found, all the twelve items also loaded to one factor to measure Organisational Ambidexterity, as shown in Table 5.42.

**Table 5.42: Extracted Factor for Organisational Ambidexterity Items (One Component measuring Organisational Ambidexterity)**

| | Component |
|---|---|
| | 1 |
| OA_Exploit1 (OAp1) | .793 |
| OA_Exploit5 (OAp5) | .793 |
| OA_Explore4 (OAf4) | .757 |
| OA_Explore2 (OAf2) | .748 |
| OA_Explore6 (OAf6) | .743 |
| OA_Exploit6 (OAp6) | .716 |
| OA_Exploit4 (OAp4) | .711 |
| OA_Exploit2 (OAp2) | .693 |
| OA_Explore3 (OAf3) | .683 |
| OA_Explore1 (OAf1) | .652 |
| OA_Explore5 (OAf5) | .568 |
| OA_Exploit3 (OAp3) | .536 |

Extraction Method: Principal Component Analysis.
a. 1 components extracted.

The two components distinguished the explorative from exploitative capabilities of the organisations, as shown in Table 5.43.

**Table 5.43: Extracted Factors for Organisational Ambidexterity (Two Components measuring the Two Dimensions of Ambidexterity)**

| | Component | |
|---|---|---|
| | 1 | 2 |
| OA_Explore3 | .775 | |
| OA_Explore4 | .727 | |
| OA_Explore2 | .716 | |
| OA_Explore1 | .695 | |
| OA_Explore6 | .685 | |
| OA_Exploit1 | .648 | .460 |
| OA_Explore5 | .598 | |
| OA_Exploit2 | .506 | .477 |
| OA_Exploit5 | | .780 |
| OA_Exploit4 | | .773 |
| OA_Exploit3 | | .765 |
| OA_Exploit6 | | .674 |

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 3 iterations.

The scree plot and total variance explained statistics, placed in appendix M9, also supported either one or two components. Table 5.44 shows the KMO measure of sampling adequacy and the Bartlett's test.

**Table 5.44: KMO and Bartlett's Test for Organisational Ambidexterity**

| | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .902 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 1179.856 |
| | Df | 66 |
| | Sig. | .000 |

The estimated KMO (0.902), and the Bartlett's test ($p < 0.05$) indicated that the data was factorable and the analysis could generate either one or two unique factors. The two factors could be identified as explorative capability and exploitative capability. The combined factor could be described as Organisational Ambidexterity.

### 5.5.10 Factor Analysis for Manager's Ambidexterity Items

The data were analysed for all the items for Manager's Ambidexterity by means of a principal component analysis, with varimax rotation. Although there was an indication of residual problem with few items; other various indicators of factorability were good. Two components with an eigenvalue of greater than 1.0 and good factor loadings were found, all the fourteen items also loaded to one factor to measure Manager's Ambidexterity, as shown in Table 5.45.

**Table 5.45: Extracted Factor for Manager's Ambidexterity Items (One Component measuring Manager's Ambidexterity)**

| | Component |
|---|---|
| | 1 |
| MA_Exploit3 (MAp3) | .699 |
| MA_Exploit6 (MAp6) | .693 |
| MA_Exploit4 (MAp4) | .690 |
| MA_Explore3 (MAf3) | .686 |
| MA_Explore2 (MAf2) | .679 |
| MA_Exploit1 (MAp1) | .677 |
| MA_Explore1 (MAf1) | .659 |
| MA_Exploit7 (MAp7) | .617 |
| MA_Explore6 (MAf6) | .594 |
| MA_Exploit2 (MAp2) | .551 |
| MA_Exploit5 (MAp5) | .516 |
| MA_Explore5 (MAf5) | .500 |
| MA_Explore4 (MAf4) | .401 |
| MA_Explore7 (MAf7) | .200 |

Extraction Method: Principal Component Analysis.
a. 1 components extracted.

In line with Organisational Ambidexterity, the initial two components distinguished the explorative from exploitative capabilities of the managers, as shown in Table 5.46.

**Table 5.46: Extracted Factors for Manager's Ambidexterity (Two Components measuring the Two Dimensions of Ambidexterity)**

| | Component | |
|---|---|---|
| | 1 | 2 |
| MA_Exploit6 | .863 | |
| MA_Exploit4 | .806 | |
| MA_Exploit7 | .799 | |
| MA_Exploit3 | .738 | |
| MA_Exploit2 | .542 | |
| MA_Exploit5 | .534 | |
| MA_Explore4 | | .709 |
| MA_Explore2 | | .674 |
| MA_Explore6 | | .655 |
| MA_Explore3 | | .644 |
| MA_Explore5 | | .639 |
| MA_Explore1 | | .592 |
| MA_Explore7 | | .549 |
| MA_Exploit1 | .451 | .519 |

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 3 iterations.

The scree plot and total variance explained statistics, placed in appendix M10, also supported either one or two components. Table 5.47 shows the KMO measure of sampling adequacy and the Bartlett's test.

**Table 5.47: KMO and Bartlett's Test for Manager's Ambidexterity**

| | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .822 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 1213.657 |
| | Df | 91 |
| | Sig. | .000 |

The estimated KMO (0.822), and the Bartlett's test ($p < 0.05$) indicated that the data was factorable and the analysis could generate either one or two unique factors. The two factors could be identified as manager's explorative capability and exploitative capability. The combined factor could be described as Manager's Ambidexterity.

### 5.5.11 Factor Analysis for Customer Engagement Items

The data were initially analysed for all the fourteen items by means of a principal component analysis, with varimax rotation. One item (Cstmer_E14R) was dropped after the initial analysis because of the problem with the residuals. For the remaining thirteen items, the various indicators of factorability were good. Three components

with an eigenvalue of greater than 1.0 and good factor loadings were found, as shown in Table 5.48.

**Table 5.48: Extracted Factors from Customer Engagement**

| | Component | | |
|---|---|---|---|
| | 1 | 2 | 3 |
| Cstmer_E5 (CE5) | .795 | | |
| Cstmer_E3 (CE3) | .732 | | |
| Cstmer_E4 (CE4) | .714 | | |
| Cstmer_E2 (CE2) | .607 | | |
| Cstmer_E1 (CE1) | .538 | | |
| Cstmer_E8 (CE8) | .513 | | |
| Cstmer_E6 (CE6) | | .850 | |
| Cstmer_E7 (CE7) | | .706 | |
| Cstmer_E9 (CE9) | | .657 | |
| Cstmer_E11 (CE11) | | | .767 |
| Cstmer_E10 (CE10) | | | .668 |
| Cstmer_E12 (CE12) | | | .649 |
| Cstmer_E13 (CE13) | | | .598 |

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 6 iterations.

**Component 1: Company-Led Customer Engagement (Eigenvalue = 5.835)**
Cstmer_E5: The company follows clients' complaints through to a logical conclusion.
Cstmer_E3: There is an open invitation for constructive criticism from the customers.
Cstmer_E4: The company often receives constructive criticisms from the customers.
Cstmer_E2: The company fully understands the needs of the customers.
Cstmer_E1: The company has an established relationship with the customers.
Cstmer_E8: The management often send messages and greetings to the customers.

**Component 2: Customer-Led Engagement (Eigenvalue = 1.178)**
Cstmer_E6: The company gets new customers via referral from current customers.
Cstmer_E7: There are evidences that our customers discuss about our business activities with potential customers.
Cstmer_E9: The company provides after sale supports for its customers.

**Component 3: Customer and Company-Led Engagement (Eigenvalue = 1.058)**
Cstmer_E11: The company receives solicited feedback from the customers.
Cstmer_E10: The company often requests for customer feedback.
Cstmer_E12: The company receives unsolicited feedback from the customers.
Cstmer_E13: The company meets with the customers to determine their future needs.

The scree plot and total variance explained statistics, placed in appendix M11, also supported the three components. Table 5.49 shows the KMO measure of sampling adequacy and the Bartlett's test.

**Table 5.49: KMO and Bartlett's Test for Customer Engagement**

| | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .861 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 1218.998 |
| | Df | 78 |
| | Sig. | .000 |

The estimated KMO (0.861), and the Bartlett's test (p-value <0.05) indicated that the data was factorable and the analysis would generate three unique factors.

### 5.5.12 Factor Analysis for Organisational Performance Items

The data were analysed for all the six items by means of a principal component analysis, with varimax rotation. All the items loaded to one factor. The various indicators of factorability were good and the residuals indicate that the solution was a good one. One component with an eigenvalue of greater than 1.0 and good factor loadings was found, as shown in Table 5.50.

**Table 5.50: Extracted Factors from Organisational Performance Items**

| | Component |
|---|---|
| | 1 |
| Growth of net profit over the last three years (PG) | .869 |
| Return on Investment (ROI) | .866 |
| Growth rate of sales (SG) | .862 |
| Overall Profitability (OP) | .861 |
| Achievement of sales target set (AST) | .846 |
| Sales Performance (SP) | .834 |

Extraction Method: Principal Component Analysis.
a. 1 components extracted.

Table 5.51 shows the KMO measure of sampling adequacy and the Bartlett's test.

**Table 5.51: KMO and Bartlett's Test for Organisational Performance**

| | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .886 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 910.283 |
| | df | 15 |
| | Sig. | .000 |

The estimated KMO (0.886) and the Bartlett's test (p-value < 0.05) indicated that the data was factorable and the analysis would generate one unique factor. The scree plot and total variance explained statistics, placed in appendix M12, also indicated one component.

## 5.6 Summary of Chapter

This chapter has provided an overview of the descriptive statistics and the exploratory factor analyses (EFA) of the survey data for the shop-floor employees and the managerial staff. Non-response bias analyses revealed that the responses from the research participants did not differ substantially from those who did not participate in the study. Through the use of Kaiser-Meyer-Olkin (KMO) Measure of Sampling

Adequacy and Bartlett's Test of Sphericity, exploratory factor analyses showed good factorability results for each of the research constructs.

EFA for each of the constructs in this chapter has helped to examine the relationships amongst the items in each construct and the suitability of the items used in the research constructs. The analysis has led to reduction in the number of items for some of the research constructs and shed light on the underlying factor structure of the research data. In addition, reduction in the number of items for some of the research constructs improves the usability of the scale and makes administering questionnaires where such scale is adopted faster. Confirmatory factor analysis takes these preliminary analyses further in order to determine validity and reliability of the research constructs, which is covered later in chapter 6. The next chapter will also help to further examine the psychometric fitness of the items and the constructs used in this study.

# Chapter 6

# 6 Quantitative Research Phase: Confirmatory Factor Analysis

The purpose of this chapter is to examine the measurement models in the managerial staff and the shop-floor staff surveys and present their corresponding goodness-of-fit. This is necessary in order to validate the suitability of the constructs for the subsequent structural models and relationships. The large volume of research data from the survey is required to be transformed into a more manageable and meaningful data. It is also important to determine the validity and reliability of the research constructs. According to Gerbing and Anderson (1988), when compared with other traditional methods such as item-total correlations and EFA, CFA provides a stricter analysis and interpretation of scales and thus gives different conclusions about their acceptability.

This chapter focuses on the psychometric fitness of the questionnaire items and the research constructs through the use of Confirmatory Factor Analysis (CFA). According to Byrne (2001 p. 99), CFA of a measuring instrument 'is most appropriately applied to measures that have been fully developed and their factor structures validated'. CFA confirms the factor structure extracted in the Exploratory Factor Analysis (EFA), and has the ability to assess the construct validity of a proposed measurement theory (Gaskin, 2012b).

## 6.1 The Choice of Structural Equation Modelling for CFA and Structural Relationships

Structural Equation Modelling (SEM) is a general, powerful and multivariate statistical methodology that takes a confirmatory approach to the analysis of a structural theory of the research phenomenon (Byrne, 2001), the use of which is becoming more widespread in the academic press. SEM combines regression analysis, path analysis and factor analysis; it therefore allows for more richly detailed statistical models than using these techniques individually (Byrne, 2001; Kline, 2005). It offers more flexible assumptions and reduces measurement error through confirmatory factor analysis. In addition to its offer of more meaningful and more valid results than other methods, SEM gives room for complete and simultaneous tests of all the relationships among all the research variables. These include the observed variables

which are directly measured from the research field and the constructs which cannot be directly measured from the research field. SEM has the ability to derive unbiased estimates of the latent constructs in the data by modelling the measurement error.

Validity and reliability are important features of every final research outcome. The use of SEM will facilitate the achievement of valid and reliable research outcomes; SEM computes and includes measurement error variables in order to make the relationships between variables more reliable.

## 6.2 SEM Indices for Model Fitness and Construct Validity

There are various indices of fit to assess the overall acceptability of the model. Various authors recommend using more than single fit indices in order to avoid any errors with the research results and their presentation (c.f. Hair et al., 2010; Kelloway, 1998). According to Hair et al. (2010), measurement of the model and construct validity can be assessed through the evaluation of three major groups of fit indices, described in the following sections.

### 6.2.1 Absolute Fit Indices

Absolute Fit Indices assess how well the structural equation model specified by the researchers reproduces the observed data (Hair et al., 2010). Thus, the following indices provide the most basic assessment for the suitability of the data to the research theory: Chi-square ($\chi^2$) statistic; Goodness-of-Fit Index (GFI); Root Mean Square Error of Approximation (RMSEA); Root Mean Square Residual (RMR) and Standardized Root Mean Residual (SRMS); and Normed Chi-square.

The Chi-square ($\chi^2$) statistic is the most fundamental absolute fit index and, as a Goodness-of-Fit (GOF) index, the desirable result is to have no difference between matrices and low $\chi^2$ values in order to support the model as a representation of the data (Hair et al., 2010). Unlike the $\chi^2$ statistic, the GFI is less sensitive to sample size. The possible value of GFI ranges from 0 to 1, with values towards 1 indicating better fit (Gaskin, 2012b). RMSEA is one of the most widely used measures and provides a better representation of how well a model fits the research sample and even the population (Cohen and Cohen, 2003). Lower values of RMSEA indicate better fit and some previous research studies have suggested a cut-off value of 0.05 or 0.08(Hair et al., 2010). SRMR, a standardised value of RMR, is defined as the

average standardised residual. This is used to compare fit across models. Lower values also represent better fit. RMR, SRMR and RMSEA are often referred to as badness-of-fit indices, in which high values suggest poor fit (Hair et al., 2010).

### 6.2.2 Incremental Fit Indices

Incremental Fit Indices indicate how well the estimated model fits relative to alternative baseline or null model which assumes no correlation among all observed variables (Hair et al., 2010). The indices include: Normed Fit Index (NFI); Tucker-Lewis Index (TLI); Comparative Fit Index (CFI); and Relative Noncentrality Index (RNI). TLI and CFI are commonly used as Incremental Fit Indices. The TLI is similar to the NFI but the former compares the standardised or normed chi-square values for the null and specified model. A model with a higher TLI value suggests a better fit than a model with a lower TLI value (Byrne, 2001). CFI is an improved version of NFI, where NFI is defined as a ratio of the difference in the chi square value for the fitted model and a null model to the chi square value for the null model (Hair et al., 2010). CFI is a widely used index with values above 0.90 associated with a good model (Kelloway, 1998; Ping, 2004).

### 6.2.3 Parsimony Fit Indices

Parsimony Fit Indices represent the third group of measures for assessing SEMs. The parsimony ratio, the ratio of degrees of freedom used by a model to the total degrees of freedom available, forms the basis for these indices (Hair et al., 2010; Browne and Cudeck 1993). Thus, the indices compare the fit of individual models with their complexities to provide information about which model among a set of competing models is the best. The indices are useful in comparing the fit of two or more models, with the more common being the Adjusted Goodness of Fit Index (AGFI) and the Parsimony Normed Fit Index (PNFI). The PNFI uses the number of degrees of freedom to adjust the NFI; a value greater than or equal to 0.5 is considered adequate for a good fit model (Schumacker and Lomax, 2004; Bryne, 2001). The AGFI takes into account differing degrees of model complexity by adjusting the GFI by a ratio of the degrees of freedom used in the model to the total degrees of freedom available (Hair et al., 2010).

### 6.2.4 Summary of GOF Indices for SEMs

Generally, the GOF of any model is inversely related to sample size and the number of variables in the models (Gaskin, 2012a). Thus, GOF indices are context-dependent. According to Gaskin (2012a), there are measures that are expected to be reported, along with their acceptable thresholds. Table 6.1 and Table 6.2 show contextualised thresholds for some of these GOF measures.

**Table 6.1: GOF Indices where number of Observations is less than 250**

| GOF Indices | m ≤ 12 | 12 < m < 30 | m ≥ 30 |
|---|---|---|---|
| p-value | Insignificant p-values | Significant p-values | Significant p-values |
| CFI, GFI, TLI | ≥ .97 | ≥ .95 | > .92 |
| RNI | Not suitable | ≥ .95 | > .92 |
| SRMR | Not suitable | ≤ .08 | ≤ .09 |
| RMSEA | < .08 | < .08 | < .08 |

Where m = number of observed variables

Adapted from Hair et al. (2010)

**Table 6.2: GOF Indices where number of Observations exceeds 250**

| GOF Indices | m ≤ 12 | 12 < m < 30 | m ≥ 30 |
|---|---|---|---|
| p-value | Insignificant p-values | Significant p-values | Significant p-values |
| CFI, GFI, TLI | ≥ .95 | ≥ .92 | > .90 |
| RNI | ≥ .95 | ≥ .92 | > .90 |
| SRMR | Not suitable | ≤ .08 | ≤ .08 |
| RMSEA | < .07 | < .07 | < .07 |

Where m = number of observed variables. RNI is not used when observations exceed 1000

Adapted from Hair et al. (2010)

Other widely-used fit indices and recommended thresholds are given in Table 6.3.

**Table 6.3: Other GOF Indices**

| GOF Indices | Recommended Threshold |
|---|---|
| Chi-square / df (CMIN / DF) | Values < 3 are good; values between 3 and 5 are sometimes permissible |
| CFI | Values > .95 are great; values between .90 and .95 are traditional; values between .90 and .80 are sometimes permissible |
| RMSEA | Values < .05 are good; values between .05 and .10 are moderate; values > .10 are bad |
| PCLOSE | > .05 |
| AGFI | > .80 |

Adapted from Hair et al. (2010); Gaskin (2012a); Byrne (2001)

As revealed by Hair et al. (2010), it is important to note that the resulting p-value is less meaningful as sample size or the number of observed variables increases.

### 6.3 The Analysis of Moment Structures Software and the CFA Model Types

The Analysis of Moment Structures (AMOS) software which is simply referred to as the Analysis of Mean and Covariance Structures program allows two different modes of model specification: AMOS Basic and AMOS Graphic (Byrne, 2001). AMOS Basic employs the use of equation statements to analyse data, while AMOS Graphic allows data to be analysed directly from the path diagram (Byrne, 2001). Thus, AMOS Graphic provides a graphical interface that is more user-friendly than a traditional programming interface with codes and equations. In this study, AMOS Graphic was adopted using the "IBM AMOS version 20" software for two purposes: (1) confirmatory factor analysis of the research constructs (*measurement models*); and (2) modelling of the structural relationships among the constructs (*structural models*), to validate the research hypotheses.

According to Byrne (2001), the CFA model focuses on the link between the latent variables (factors) and their observed or measured variables, and therefore represents a measurement model; however, the structural model focuses on the links among the latent variables themselves. The general convention for the use of geometric symbols in measurement and structural models, as stated in Byrne (2001), is as follows:

- Circle or ellipse represents unobserved latent factor
- Square or rectangle represents observed variable
- Single-headed arrow (→) represents the impact of one variable on another
- Double-headed arrow (↔) represents covariance or correlation between a pair of variables.

There are two groups of CFA models: first-order CFA model; and second-order CFA model. The first-order involves testing for the validity of the theoretical structure of a construct and the factorial structure of a measuring instrument, while the second-order focuses only on the factorial structure of a measuring instrument (Byrne, 2001). Thus, a second-order model relates two or more latent factors from their respective first-order models to generate a higher order factor. The AMOS software was used throughout the following sections.

## 6.4 CFA for Research Constructs in Shop-floor Employee Survey

### 6.4.1 CFA for Organic Structure

AMOS was used to model the six items from the EFA in section 5.5.1.1 into a latent construct defined as Organic Structure. The initial CFA model revealed one poorly performing item (ORG8: Encourages operating styles that range freely from the very formal to the very informal), which was then removed. The remaining five items were remodelled and the result showed good factor loading estimates for each of the items. The resulting CFA model suggested a good fit for these items, as shown in Table 6.4.

**Table 6.4: GOF Fit Statistics for Organic Structure**

| CMIN/DF | GFI | AGFI | TLI | CFI | RMSEA | PCLOSE |
|---|---|---|---|---|---|---|
| 3.081 | .991 | .955 | .960 | .988 | .072 | .192 |

The value of GFI, AGFI, TLI and CFI exceeds the recommended minimum permissible threshold of 0.80; PCLOSE is greater than the recommended minimum threshold of 0.05, while RMSEA is less than the recommended maximum value of 0.10.

Figure 6.1 shows the measurement model with standardised factor loadings for each of the observed variables.

**Figure 6.1: CFA Model for Organic Structure showing Standardised Factor Loadings**

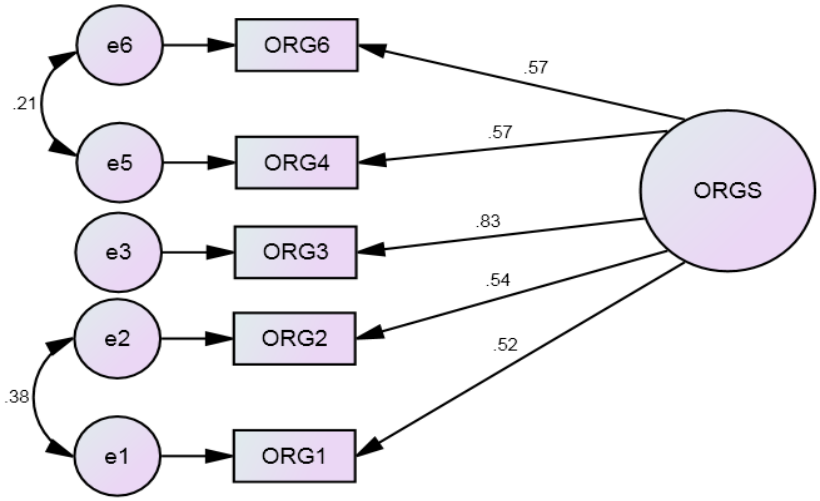



Table 6.5 shows the regression weight estimate and the corresponding standard error and p-value for each of the items.

**Table 6.5: Regression Weights for Organic Structure**

| | Estimate | S.E. | C.R. | P | Label |
|---|---|---|---|---|---|
| ORG1 <--- ORGS | .603 | .063 | 9.594 | *** | par_1 |
| ORG2 <--- ORGS | .562 | .056 | 10.003 | *** | par_2 |
| ORG3 <--- ORGS | .929 | .063 | 14.786 | *** | par_3 |
| ORG4 <--- ORGS | .678 | .066 | 10.335 | *** | par_4 |
| ORG6 <--- ORGS | .708 | .069 | 10.253 | *** | par_5 |

As recommended by Anderson and Gerbing (1988), all the factor loadings for the six items are statistically significant. The regression weight for Organic Structure in the prediction of each of the observed items is significantly different from zero at the 0.001 level (two-tailed). Furthermore, each of the regression weight estimates for the items is greater than the recommended threshold of 0.5 by Hair et al. (2010), as shown in Table 6.5.

### 6.4.2 CFA for Clan Culture

Five items from the EFA in section 5.5.1.2 were modelled into a latent construct defined as Clan Culture. The result showed good factor loading estimates for each of the items. The resulting CFA model suggested a good fit for these items, as shown in Table 6.6.

**Table 6.6: GOF Fit Statistics for Clan Culture**

| CMIN/DF | GFI | AGFI | TLI | CFI | RMSEA | PCLOSE |
|---|---|---|---|---|---|---|
| .837 | .997 | .988 | 1.000 | 1.000 | .000 | .837 |

Figure 6.2 shows the measurement model with standardised factor loadings for each of the observed variables, item CLA1 shows the lowest standardised loading.

**Figure 6.2: CFA Model for Clan Culture showing Standardised Factor Loadings**

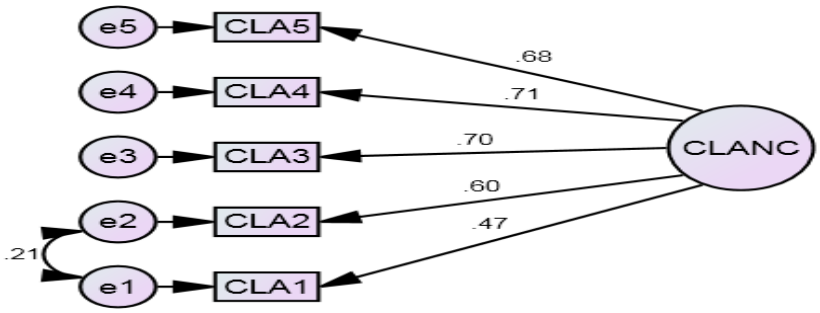


Table 6.7 shows the regression weight estimate and the corresponding standard error and p-value for each of the items. All the factor loadings for the five items are statistically significant.

**Table 6.7: Regression Weights for Clan Culture**

| | Estimate | S.E. | C.R. | P | Label |
|---|---|---|---|---|---|
| CLA1 <--- CLANC | .593 | .069 | 8.594 | *** | par_1 |
| CLA2 <--- CLANC | .700 | .060 | 11.656 | *** | par_2 |
| CLA3 <--- CLANC | .656 | .047 | 14.038 | *** | par_3 |
| CLA4 <--- CLANC | .724 | .051 | 14.274 | *** | par_4 |
| CLA5 <--- CLANC | .734 | .054 | 13.523 | *** | par_5 |

The regression weight for Clan Culture in the prediction of each of the observed items is significantly different from zero at the 0.001 level (two-tailed). Also, each of the regression weight estimates for the items is greater than the recommended threshold.

### 6.4.3 CFA for Adhocracy Culture

Four items that loaded to component 1, Commitment to Innovation and Creativity, from the EFA in section 5.5.1.3 were modelled into a latent construct defined as Adhocracy Culture (ADH). The result showed good factor loading estimates for each of the items. The resulting CFA model suggested a good fit for these items, as shown in Table 6.8.

**Table 6.8: GOF Fit Statistics for Adhocracy Culture**

| CMIN/DF | GFI | AGFI | TLI | CFI | RMSEA | PCLOSE |
|---|---|---|---|---|---|---|
| .880 | .999 | .989 | 1.000 | 1.000 | .000 | .550 |

Figure 6.3 shows the measurement model with standardised factor loadings for each of the observed variables.

**Figure 6.3: CFA Model for Adhocracy Culture showing Standardised Factor Loadings**

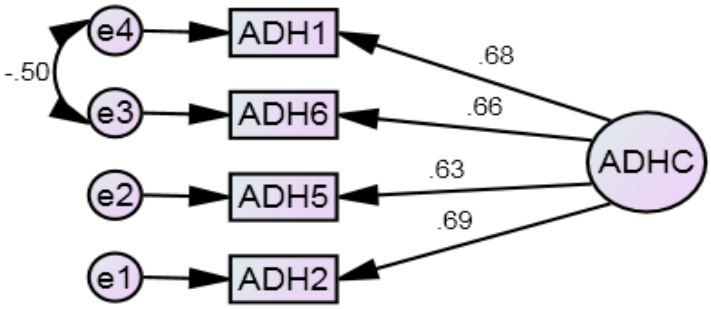


Table 6.9 shows the regression weight estimate and the corresponding standard error and p-value for each of the items.

**Table 6.9: Regression Weights for Adhocracy Culture**

| | Estimate | S.E. | C.R. | P | Label |
|---|---|---|---|---|---|
| ADH2 <--- ADHC | .687 | .051 | 13.348 | *** | par_1 |
| ADH5 <--- ADHC | .595 | .049 | 12.184 | *** | par_2 |
| ADH6 <--- ADHC | .664 | .058 | 11.402 | *** | par_3 |
| ADH1 <--- ADHC | .651 | .055 | 11.925 | *** | par_4 |

All the factor loadings for the five items are statistically significant. The regression weight for Adhocracy Culture in the prediction of each of the observed items is significantly different from zero. Moreover, each of the regression weight estimates for the items is greater than 0.5.

### 6.4.4 CFA for Knowledge Sharing Culture

Four items that loaded to Knowledge Sharing Culture (KSC) from the EFA in section 5.5.1.4 were modelled into a latent construct CFA. The result showed good factor loading estimates for each of the items. The resulting CFA model suggested a good fit for these items, as shown in Table 6.10.

**Table 6.10: GOF Fit Statistics for KSC**

| CMIN/DF | GFI | AGFI | TLI | CFI | RMSEA | PCLOSE |
|---|---|---|---|---|---|---|
| .350 | 1.000 | .996 | 1.000 | 1.000 | .000 | .713 |

Figure 6.4 shows the measurement model with standardised factor loadings for each of the observed variables.

**Figure 6.4: CFA Model for Knowledge Sharing Culture showing Standardised Factor Loadings**

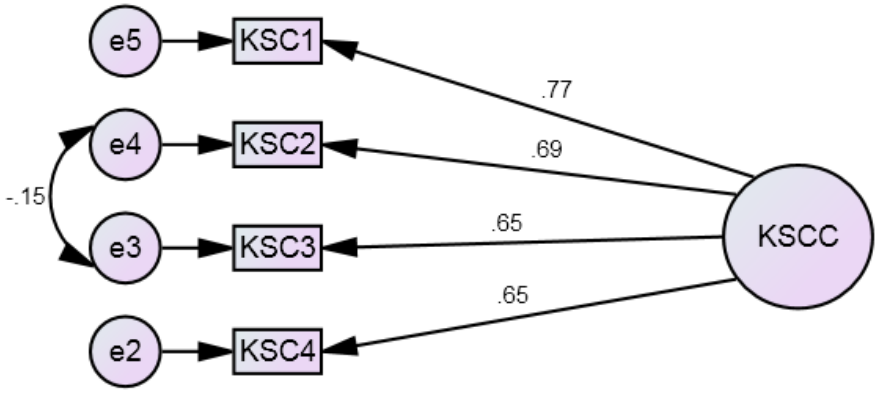


Table 6.11 shows the regression weight estimate and the corresponding standard error and the p-value for each of the items.

**Table 6.11: Regression Weights for KSC**

| | Estimate | S.E. | C.R. | P | Label |
|---|---|---|---|---|---|
| KSC4 <--- KSCC | .664 | .052 | 12.851 | *** | par_1 |
| KSC3 <--- KSCC | .680 | .056 | 12.041 | *** | par_2 |
| KSC2 <--- KSCC | .694 | .053 | 13.032 | *** | par_3 |
| KSC1 <--- KSCC | .868 | .057 | 15.296 | *** | par_4 |

All the factor loadings for the four items are statistically significant. The regression weight for Knowledge Sharing Culture in the prediction of each of the observed items is significantly different from zero. Furthermore, each of the regression weight estimates for the items is greater than the recommended threshold of 0.5.

### 6.4.5 CFA for Employee Level of Engagement

After the initial analysis for the eight items that loaded well during the EFA of Employee Level of Engagement (EE) in section 5.5.1.5, the model showed two poorly performing items, EE10R (I do not have any intention to stay with this company for long time) and EE11R (Sometimes I think of other things when doing my job). These items were dropped, and the remaining six items modelled well into the latent construct. The result showed good factor loading estimates for each of the items. The resulting CFA model suggested a good fit for these items, as shown in Table 6.12.

**Table 6.12: GOF Fit Statistics for Employee Level of Engagement**

| CMIN/DF | GFI | AGFI | TLI | CFI | RMSEA | PCLOSE |
|---|---|---|---|---|---|---|
| 1.132 | .993 | .980 | .996 | .998 | .018 | .826 |

Figure 6.5 shows the measurement model with standardised factor loadings for each of the observed variables.

**Figure 6.5: CFA Model for Employee Level of Engagement showing Standardised Factor Loadings**

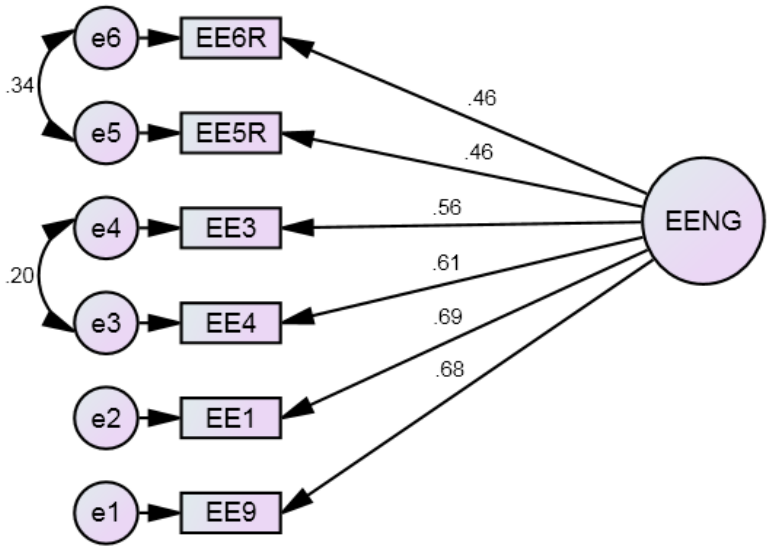



Table 6.13 shows the regression weight estimate and the corresponding standard error and p-value for each of the items.

**Table 6.13: Regression Weights for Employee Level of Engagement**

| | | | Estimate | S.E. | C.R. | P | Label |
|---|---|---|---|---|---|---|---|
| EE9 | <--- | EENG | .783 | .061 | 12.866 | *** | par_1 |
| EE1 | <--- | EENG | .682 | .051 | 13.264 | *** | par_2 |
| EE4 | <--- | EENG | .640 | .057 | 11.286 | *** | par_3 |
| EE3 | <--- | EENG | .629 | .062 | 10.105 | *** | par_4 |
| EE5R | <--- | EENG | .531 | .063 | 8.369 | *** | par_5 |
| EE6R | <--- | EENG | .540 | .066 | 8.244 | *** | par_6 |

All the factor loadings for the six items are statistically significant. The regression weight for Employee Level of Engagement in the prediction of each of the observed items is significantly different from zero. The regression weight estimates for the items are all greater than the recommended threshold.

### 6.4.6 CFA for Employee Passive Ambidexterity

#### 6.4.6.1 CFA for Employee Passive Explorative Capability

Five items from the EFA of the Shop-floor Employee Ambidexterity in section 5.5.1.6 were modelled into a latent construct defined as Employee Passive Explorative Capability (EPECf). Each of the items, Passive Explorative Capability (PEAf), modelled well into the latent construct, as revealed in the factor loading estimates for

the items. The resulting CFA model suggested a good fit for these items, as shown in Table 6.14.

**Table 6.14: GOF Fit Statistics for EPECf**

| CMIN/DF | GFI | AGFI | TLI | CFI | RMSEA | PCLOSE |
|---|---|---|---|---|---|---|
| 1.907 | .994 | .971 | .993 | .998 | .048 | .438 |

Figure 6.6 shows the measurement model with standardised factor loadings for each of the observed variables.

**Figure 6.6: CFA Model for EPECf showing Standardised Factor Loadings**

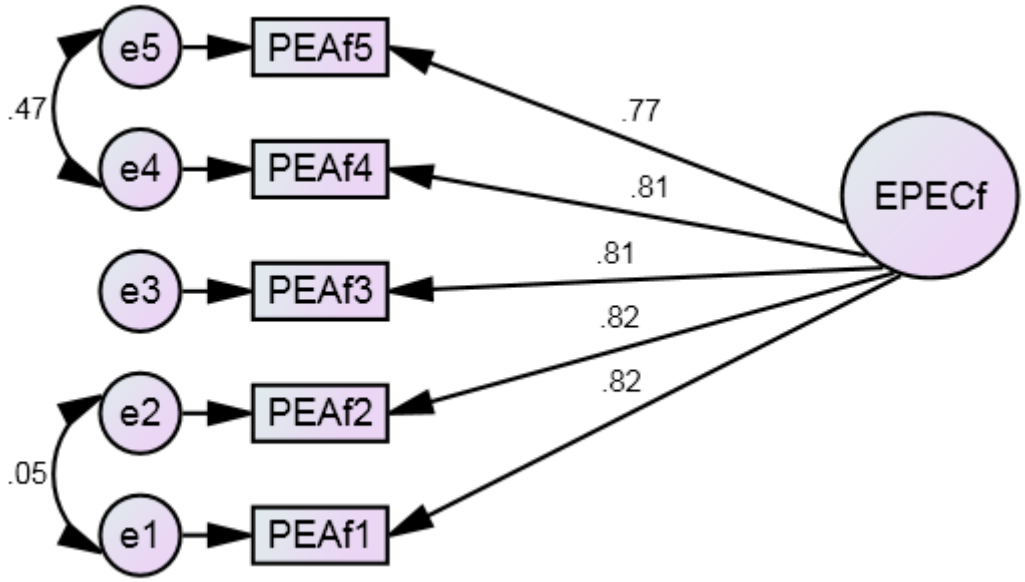



Table 6.15 shows the regression weight estimates and the corresponding standard error and p-value for each of the items.

**Table 6.15: Regression Weights for EPECf**

| | Estimate | S.E. | C.R. | P | Label |
|---|---|---|---|---|---|
| PEAf1 <--- EPECf | .792 | .043 | 18.298 | *** | par_1 |
| PEAf2 <--- EPECf | .803 | .044 | 18.409 | *** | par_2 |
| PEAf3 <--- EPECf | .854 | .046 | 18.500 | *** | par_3 |
| PEAf4 <--- EPECf | .843 | .046 | 18.518 | *** | par_4 |
| PEAf5 <--- EPECf | .870 | .051 | 16.998 | *** | par_5 |

All the factor loadings for the five items are statistically significant. The regression weight for EPECf in the prediction of each of the observed items is significantly different from zero. Also, each of the regression weight estimates for the items is greater than the recommended threshold.

#### 6.4.6.2 CFA for Employee Passive Exploitative Capability

Five items from the EFA of the Shop-floor Employee Ambidexterity in section 5.5.1.6 were modelled into a latent construct defined as Employee Passive Exploitative Capability (EPECp). Each of the items, Passive Exploitative Capability (PEAp), modelled well into the latent construct, as revealed in the factor loading estimates for the items. The resulting CFA model suggested a good fit for these items, as shown in Table 6.16.

**Table 6.16: GOF Fit Statistics for EPECp**

| CMIN/DF | GFI | AGFI | TLI | CFI | RMSEA | PCLOSE |
|---|---|---|---|---|---|---|
| 1.810 | .993 | .974 | .994 | .997 | .045 | .486 |

Figure 6.7 shows the measurement model with standardised factor loadings for each of the observed variables.

**Figure 6.7: CFA Model for EPECp showing Standardised Factor Loadings**

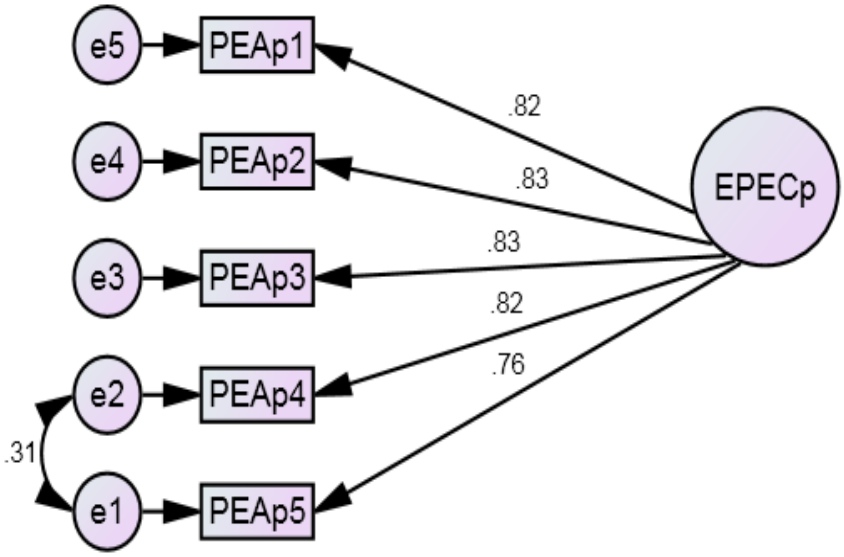



Table 6.17 shows the regression weight estimate and the corresponding standard error and p-value for each of the items.

**Table 6.17: Regression Weights for EPECp**

| | Estimate | S.E. | C.R. | P | Label |
|---|---|---|---|---|---|
| PEAp5 <--- EPECp | .719 | .042 | 16.978 | *** | par_1 |
| PEAp4 <--- EPECp | .753 | .039 | 19.332 | *** | par_2 |
| PEAp3 <--- EPECp | .768 | .039 | 19.602 | *** | par_3 |
| PEAp2 <--- EPECp | .751 | .038 | 19.558 | *** | par_4 |
| PEAp1 <--- EPECp | .706 | .037 | 19.258 | *** | par_5 |

All the factor loadings for the five items are statistically significant. The regression weight for EPECp in the prediction of each of the observed items is significantly different from zero at the 0.001 level (two-tailed). Each of the regression weight estimates is greater than the recommended threshold of 0.5, as shown in Table 6.17.

### 6.4.6.3 Employee Passive Ambidexterity

Items from EPECf and EPECp latent constructs were modelled into a latent construct defined as Employee Passive Ambidexterity (EPA). Four poorly performing items, PEAf2, PEAf3, PEAp1 and PEAp5, were removed in order to produce a single measurement model with a good fit. The remaining six items modelled well into the latent construct as revealed in the factor loading estimates for each of the items. The resulting CFA model suggested a good fit for these items, as shown in Table 6.18.

**Table 6.18: GOF Fit Statistics for Employee Passive Ambidexterity**

| CMIN/DF | GFI | AGFI | TLI | CFI | RMSEA | PCLOSE |
|---|---|---|---|---|---|---|
| 1.594 | .992 | .973 | .994 | .998 | .039 | .606 |

Figure 6.8 shows the single measurement model with standardised factor loadings for each of the observed variables.

**Figure 6.8: CFA Model for EPA showing Standardised Factor Loadings**

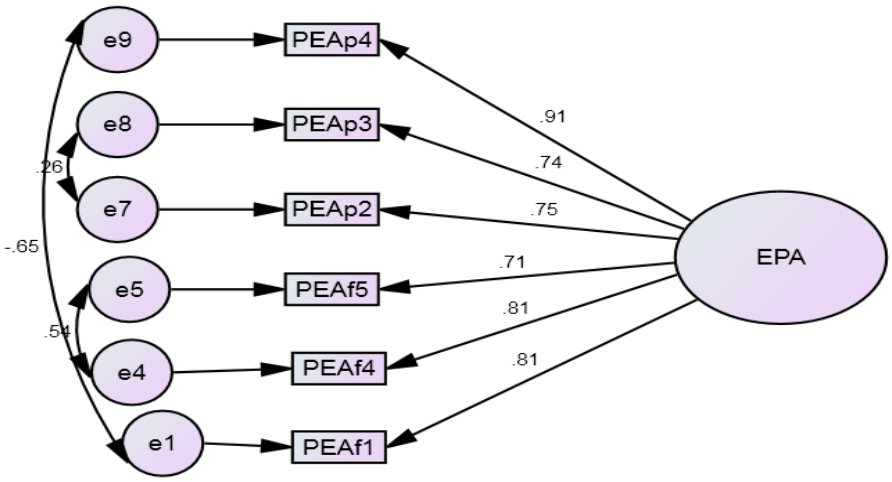


Table 6.19 shows the regression weight estimate and the corresponding standard error and p-value for each of the items.

Table 6.19: Regression Weights for EPA

| | Estimate | S.E. | C.R. | P | Label |
|---|---|---|---|---|---|
| PEAf1 <--- EPA | .783 | .044 | 17.910 | *** | par_1 |
| PEAf4 <--- EPA | .839 | .044 | 18.889 | *** | par_2 |
| PEAf5 <--- EPA | .811 | .051 | 15.956 | *** | par_3 |
| PEAp2 <--- EPA | .676 | .040 | 16.903 | *** | par_4 |
| PEAp3 <--- EPA | .687 | .041 | 16.801 | *** | par_5 |
| PEAp4 <--- EPA | .834 | .038 | 22.083 | *** | par_6 |

All the factor loadings for the six items are statistically significant. The regression weight for EPA in the prediction of each of the observed items is significantly different from zero at the 0.001 level (two-tailed). The regression weight estimate for each of the items is greater than the recommended threshold of 0.5.

### 6.4.7 CFA for Employee Active Ambidexterity

#### 6.4.7.1 CFA for Employee Active Explorative Capability

Four items from the EFA of the Shop-floor Employee Ambidexterity in section 5.5.1.6 were modelled into a latent construct defined as Employee Active Explorative Capability (EAECf). Each of the items, Active Explorative Capability (AEAf), modelled well into the latent construct, as revealed in the factor loading estimates for the items. The resulting CFA model suggested a good fit for these items, as shown in Table 6.20.

**Table 6.20: GOF Fit Statistics for EPECf**

| CMIN/DF | GFI | AGFI | TLI | CFI | RMSEA | PCLOSE |
|---|---|---|---|---|---|---|
| 2.374 | .994 | .970 | .986 | .995 | .059 | .320 |

Figure 6.9 shows the measurement model with standardised factor loadings for each of the observed variables.

**Figure 6.9: CFA Model for EAECf showing Standardised Factor Loadings**

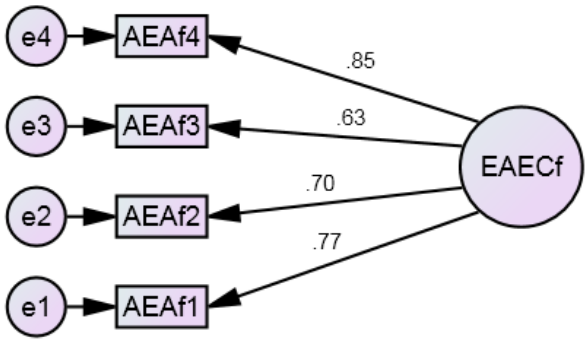



Table 6.21 shows the regression weight estimate and the corresponding standard error and p-value for each of the items.

**Table 6.21: Regression Weights for EAECf**

| | Estimate | S.E. | C.R. | P | Label |
|---|---|---|---|---|---|
| AEAf1 <--- EAECf | .971 | .058 | 16.635 | *** | par_1 |
| AEAf2 <--- EAECf | .885 | .059 | 14.957 | *** | par_2 |
| AEAf3 <--- EAECf | .829 | .064 | 12.902 | *** | par_3 |
| AEAf4 <--- EAECf | 1.089 | .057 | 19.196 | *** | par_4 |

All the factor loadings for the four items are statistically significant. The regression weight for EAECf in the prediction of each of the observed items is significantly different from zero. Also, each of the regression weight estimates is greater than the recommended value, as shown in Table 6.21.

### 6.4.7.2 CFA for Employee Active Exploitative Capability

Four items from the EFA of the Shop-floor Employee Ambidexterity in section 5.5.1.6 5 were modelled into a latent construct defined as Employee Active Exploitative Capability (EAECp). Each of the items, Active Exploitative Capability (AEAp), modelled well into the latent construct, as shown in the factor loading estimates for the items. The resulting CFA model suggested a good fit for these items, as shown in Table 6.22.

**Table 6.22: GOF Fit Statistics for EAECp**

| CMIN/DF | GFI | AGFI | TLI | CFI | RMSEA | PCLOSE |
|---|---|---|---|---|---|---|
| .964 | .999 | .988 | 1.000 | 1.000 | .000 | .530 |

Figure 6.10 shows the measurement model with standardised factor loadings for each of the observed variables.

**Figure 6.10: CFA Model for EAECp showing Standardised Factor Loadings**

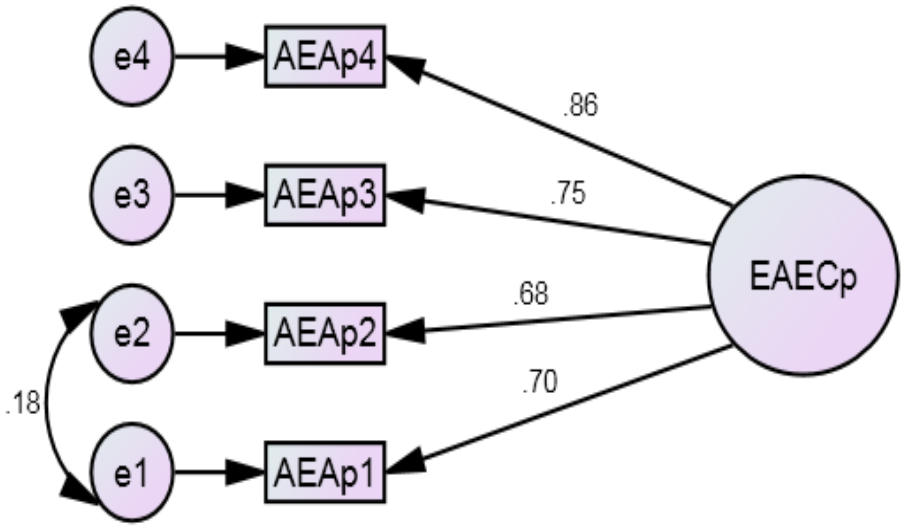



Table 6.23 shows the regression weight estimate and the corresponding standard error and p-value for each of the items.

**Table 6.23: Regression Weights for EAECp**

| | Estimate | S.E. | C.R. | P | Label |
|---|---|---|---|---|---|
| AEAp1 <--- EAECp | .925 | .063 | 14.603 | *** | par_1 |
| AEAp2 <--- EAECp | .893 | .064 | 13.949 | *** | par_2 |
| AEAp3 <--- EAECp | 1.004 | .062 | 16.207 | *** | par_3 |
| AEAp4 <--- EAECp | 1.123 | .059 | 19.043 | *** | par_4 |

All the factor loadings for the five items are statistically significant. The regression weight for EAECp in the prediction of each of the observed items is significantly different from zero, and each of the regression weight estimates for the items is greater than the recommended minimum value.

#### 6.4.7.3 Employee Active Ambidexterity

Items from EAECf and EAECp latent constructs were modelled into a latent construct defined as Employee Active Ambidexterity (EAA). Two poorly performing items, AEAf3 and AEAp2, were removed in order to produce a single measurement model with a good fit. The remaining six items modelled well into the latent construct as

revealed in the factor loading estimates for each of the items. The resulting CFA model suggested a good fit for these items, as shown in Table 6.24.

**Table 6.24: GOF Fit Statistics for Employee Active Ambidexterity**

| CMIN/DF | GFI | AGFI | TLI | CFI | RMSEA | PCLOSE |
|---|---|---|---|---|---|---|
| 3.390 | .983 | .942 | .978 | .991 | .078 | .093 |

Figure 6.11 shows the measurement model with standardised factor loadings for each of the observed variables.

**Figure 6.11: CFA Model for EAA showing Standardised Factor Loadings**

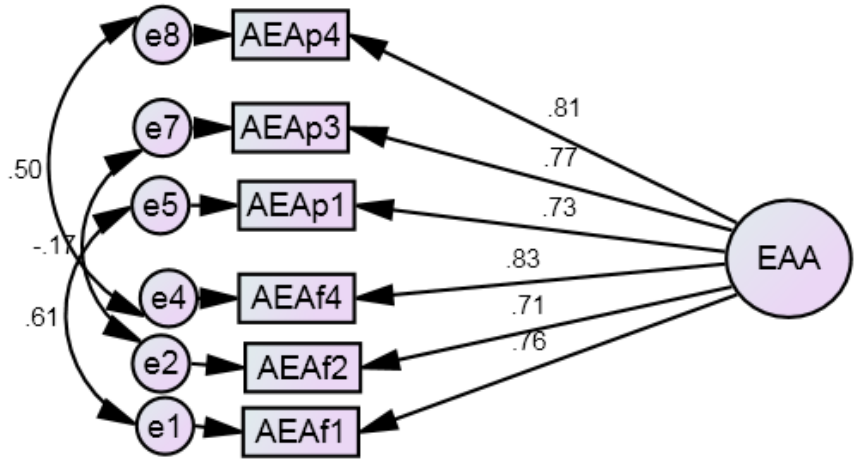



Table 6.25 presents the regression weight estimate and the corresponding standard error and p-value for each of the items.

Table 6.25: Regression Weights for EAA

| | Estimate | S.E. | C.R. | P | Label |
|---|---|---|---|---|---|
| AEAf1 <--- EAA | .969 | .057 | 17.048 | *** | par_1 |
| AEAf2 <--- EAA | .896 | .060 | 15.062 | *** | par_2 |
| AEAf4 <--- EAA | 1.062 | .056 | 19.023 | *** | par_3 |
| AEAp1 <--- EAA | .957 | .060 | 15.863 | *** | par_4 |
| AEAp3 <--- EAA | 1.025 | .061 | 16.741 | *** | par_5 |
| AEAp4 <--- EAA | 1.051 | .058 | 18.045 | *** | par_6 |

All the factor loadings for the six items are statistically significant. The regression weight for EAA in the prediction of each of the observed items is significantly different from zero. The regression weight estimate for each of the items is greater than the recommended threshold of 0.5.

## 6.5 CFA for Research Constructs in Managerial Staff Survey

### 6.5.1 CFA for Organisational Innovation

Ten items from the EFA in section 5.5.1.7 were modelled into a latent construct defined as Organisational Innovation: ORGIN. The items modelled well into the latent construct as revealed in the factor loading estimates for each of the items. The resulting CFA model suggested a good fit for these items, as shown in Table 6.26.

**Table 6.26: GOF Fit Statistics for Organisational Innovation**

| CMIN/DF | GFI | AGFI | TLI | CFI | RMSEA | PCLOSE |
|---|---|---|---|---|---|---|
| 1.233 | .962 | .937 | .991 | .994 | .034 | .773 |

Figure 6.12 shows the measurement model with standardised factor loadings for each of the observed variables.

**Figure 6.12: CFA Model for Organisational Innovation showing Standardised Factor Loadings**

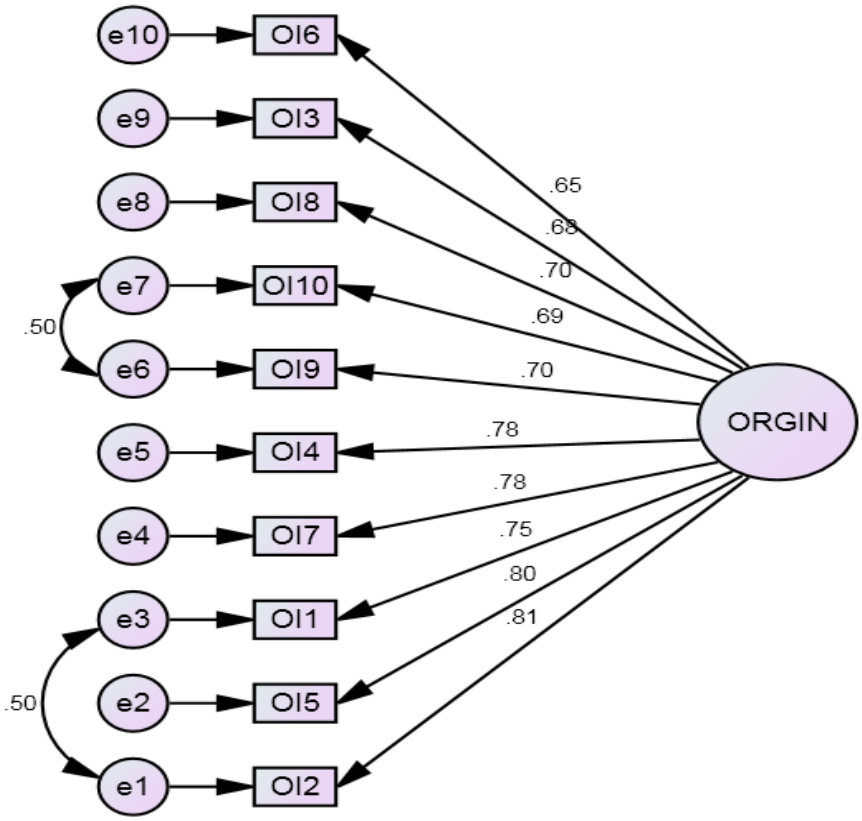



Table 6.27 shows the regression weight estimate and the corresponding standard error and p-value for each of the items.

**Table 6.27: Regression Weights for Organisational Innovation**

| | | | Estimate | S.E. | C.R. | P | Label |
|---|---|---|---|---|---|---|---|
| OI2 | <--- | ORGIN | .786 | .058 | 13.440 | *** | par_1 |
| OI5 | <--- | ORGIN | .818 | .062 | 13.249 | *** | par_2 |
| OI1 | <--- | ORGIN | .766 | .063 | 12.093 | *** | par_3 |
| OI7 | <--- | ORGIN | .831 | .065 | 12.879 | *** | par_4 |
| OI4 | <--- | ORGIN | .802 | .063 | 12.745 | *** | par_5 |
| OI9 | <--- | ORGIN | .697 | .063 | 11.051 | *** | par_6 |
| OI10 | <--- | ORGIN | .620 | .058 | 10.752 | *** | par_7 |
| OI8 | <--- | ORGIN | .691 | .063 | 11.042 | *** | par_8 |
| OI3 | <--- | ORGIN | .732 | .069 | 10.551 | *** | par_9 |
| OI6 | <--- | ORGIN | .676 | .068 | 9.941 | *** | par_10 |

All the factor loadings for the ten items are statistically significant. The regression weight for Organisational Innovation in the prediction of each of the observed items is significantly different from zero, and each of the regression weight estimates for the items is greater than the recommended threshold of 0.5.

### 6.5.2 CFA for Marketing Innovation

Ten items from the EFA in section 5.5.1.8 were modelled into a latent construct defined as Marketing Innovation capability: MARIN. The initial CFA model revealed one poorly performing item, MI4 (Implemented improvements in product pricing). The remaining nine items were remodelled and the result showed good factor loading estimate for each of the items. The resulting CFA model suggested a good fit for the model items, as shown in Table 6.28.

**Table 6.28: GOF Fit Statistics for Marketing Innovation**

| CMIN/DF | GFI | AGFI | TLI | CFI | RMSEA | PCLOSE |
|---|---|---|---|---|---|---|
| 2.074 | .951 | .905 | .959 | .974 | .073 | .094 |

Figure 6.13 shows the measurement model with standardised factor loadings for each of the observed variables.

**Figure 6.13: CFA Model for Marketing Innovation showing Standardised Factor Loadings**

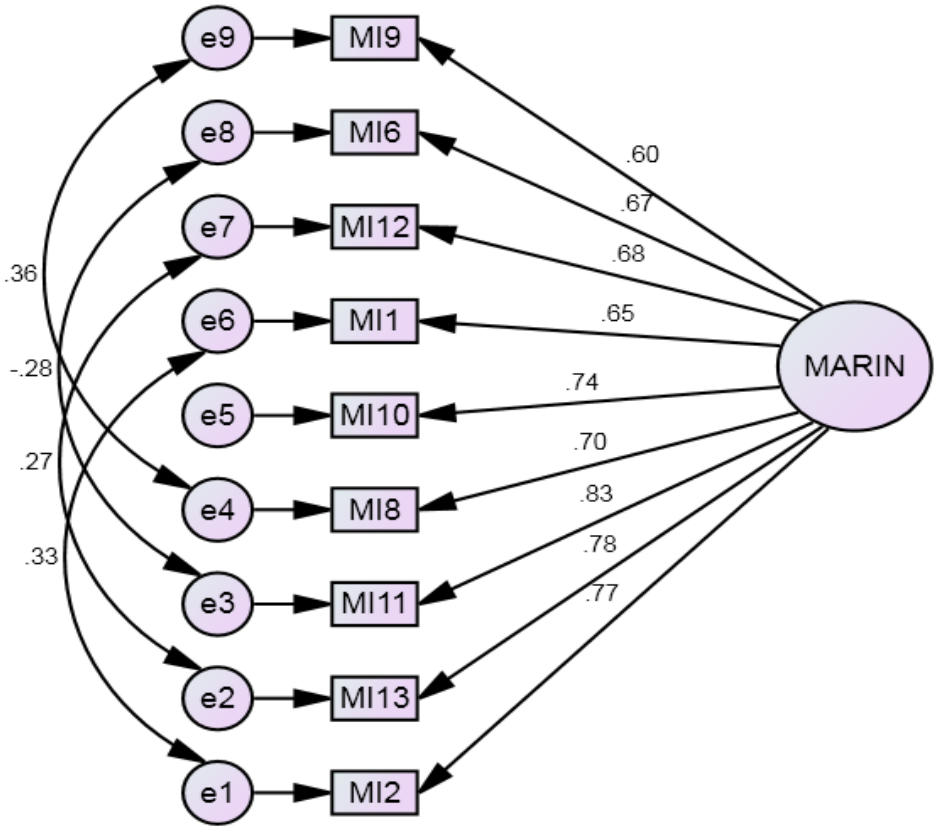



Table 6.29 presents the regression weight estimate and the corresponding standard error and p-value for each of the items.

Table 6.29: Regression Weights for Marketing Innovation

| | Estimate | S.E. | C.R. | P | Label |
|---|---|---|---|---|---|
| MI2 <--- MARIN | .776 | .062 | 12.483 | *** | par_1 |
| MI13 <--- MARIN | .816 | .063 | 12.861 | *** | par_2 |
| MI11 <--- MARIN | .839 | .061 | 13.730 | *** | par_3 |
| MI8 <--- MARIN | .741 | .068 | 10.904 | *** | par_4 |
| MI10 <--- MARIN | .731 | .062 | 11.820 | *** | par_5 |
| MI1 <--- MARIN | .728 | .073 | 9.926 | *** | par_6 |
| MI12 <--- MARIN | .685 | .065 | 10.590 | *** | par_7 |
| MI6 <--- MARIN | .688 | .068 | 10.084 | *** | par_8 |
| MI9 <--- MARIN | .562 | .062 | 9.051 | *** | par_9 |

All the factor loadings for the ten items are statistically significant. The regression weight for Marketing Innovation in the prediction of each of the observed items is significantly different from zero at the 0.001 level (two-tailed). The regression weight estimate for each of the items is also greater than the recommended threshold of 0.5.

### 6.5.3 Organisational Ambidexterity

#### 6.5.3.1 Organisational Explorative Capability

Six items from the EFA for Organisational Ambidexterity in section 5.5.1.9 were modelled into a latent construct defined as Organisational Explorative Capability (OECf). The items modelled well into the latent construct as revealed in the factor loading estimates for each of the items. The resulting CFA model suggested a good fit for these items, as shown in Table 6.30.

**Table 6.30: GOF Fit Statistics for Organisational Explorative Capability**

| CMIN/DF | GFI | AGFI | TLI | CFI | RMSEA | PCLOSE |
|---|---|---|---|---|---|---|
| 2.256 | .974 | .921 | .956 | .980 | .079 | .153 |

Figure 6.14 shows the measurement model with standardised factor loadings for each of the observed variables.

**Figure 6.14: CFA Model for OECf showing Standardised Factor Loadings**

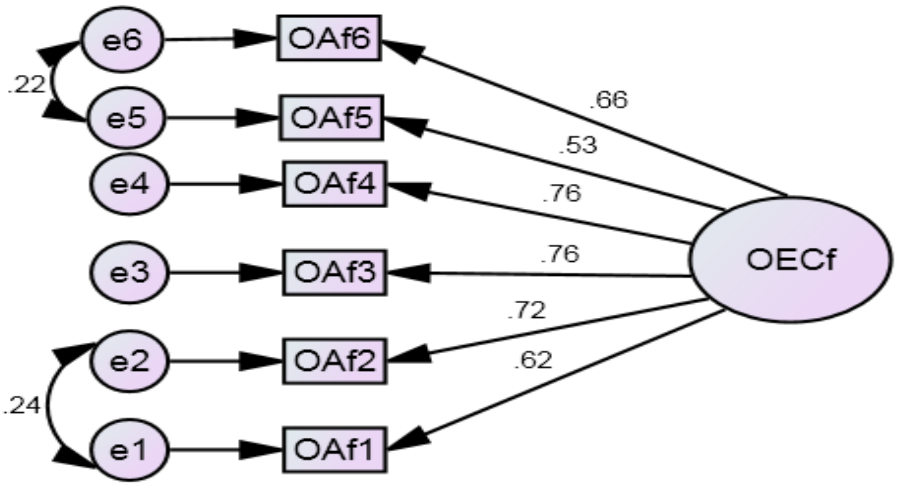



Table 6.31 shows the regression weight estimate and the corresponding standard error and p-value for each of the items.

**Table 6.31: Regression Weights for OECf**

| | Estimate | S.E. | C.R. | P | Label |
|---|---|---|---|---|---|
| OAf1 <--- OECf | .672 | .077 | 8.724 | *** | par_1 |
| OAf2 <--- OECf | .765 | .071 | 10.848 | *** | par_2 |
| OAf3 <--- OECf | .796 | .068 | 11.680 | *** | par_3 |
| OAf4 <--- OECf | .798 | .069 | 11.562 | *** | par_4 |
| OAf5 <--- OECf | .565 | .077 | 7.310 | *** | par_5 |
| OAf6 <--- OECf | .690 | .071 | 9.733 | *** | par_7 |

All the factor loadings for the six items are statistically significant. The regression weight for OECf in the prediction of each of the observed items is significantly different from zero at the 0.001 level (two-tailed). Each of the regression weight estimates for the items is greater than the minimum recommended threshold.

#### 6.5.3.2 Organisational Exploitative Capability

Six items from the EFA for Organisational Ambidexterity in section 5.5.1.9 were modelled into a latent construct defined as Organisational Exploitative Capability (OECp). The items modelled well into the latent construct as revealed in the factor loading estimates for each of the items. The resulting CFA model suggested a good fit for these items, as shown in Table 6.32.

**Table 6.32: GOF Fit Statistics for Organisational Exploitative Capability**

| CMIN/DF | GFI | AGFI | TLI | CFI | RMSEA | PCLOSE |
|---|---|---|---|---|---|---|
| 2.272 | .975 | .934 | .962 | .980 | .080 | .138 |

Figure 6.15 shows the measurement model with standardised factor loadings for each of the observed variables.

**Figure 6.15: CFA Model for OECp showing Standardised Factor Loadings**

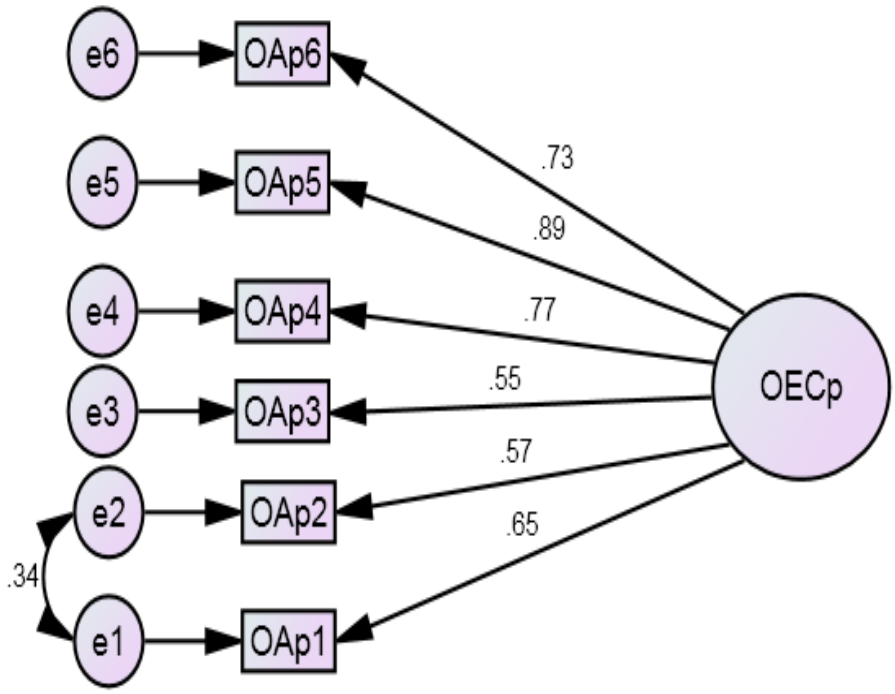



Table 6.33 presents the regression weight estimate and the corresponding standard error and p-value for each of the items.

**Table 6.33: Regression Weights for OECp**

| | | | Estimate | S.E. | C.R. | P | Label |
|---|---|---|---|---|---|---|---|
| OAp1 | <--- | OECp | .600 | .061 | 9.832 | *** | par_1 |
| OAp2 | <--- | OECp | .536 | .064 | 8.354 | *** | par_2 |
| OAp4 | <--- | OECp | .776 | .064 | 12.224 | *** | par_3 |
| OAp5 | <--- | OECp | .921 | .061 | 15.102 | *** | par_4 |
| OAp6 | <--- | OECp | .713 | .062 | 11.506 | *** | par_5 |
| OAp3 | <--- | OECp | .611 | .076 | 8.081 | *** | par_6 |

All the factor loadings for the six items are statistically significant. The regression weight for OECp in the prediction of each of the observed items is significantly different from zero at the 0.001 level (two-tailed). Furthermore, each of the regression weight estimates for the items is greater than the recommended threshold of 0.5.

#### 6.5.3.3 Organisational Ambidexterity

Items from OECf and OECp latent constructs were modelled into a single latent construct defined as Organisational Ambidexterity. Four poorly performing items, OAp3, OAp4, OAf1 and OAf5, were removed in order to produce a structural model with a good fit. The remaining eight items modelled well into the latent construct as revealed in the factor loading estimates for the items. The resulting CFA model suggested a good fit for these items, as shown in Table 6.34.

**Table 6.34: GOF Fit Statistics for Organisational Ambidexterity**

| CMIN/DF | GFI | AGFI | TLI | CFI | RMSEA | PCLOSE |
|---|---|---|---|---|---|---|
| 2.289 | .955 | .906 | .953 | .972 | .080 | .066 |

Figure 6.16 shows the measurement model with standardised factor loadings for the observed variables.

**Figure 6.16: CFA Model for Organisational Ambidexterity showing Standardised Factor Loadings**

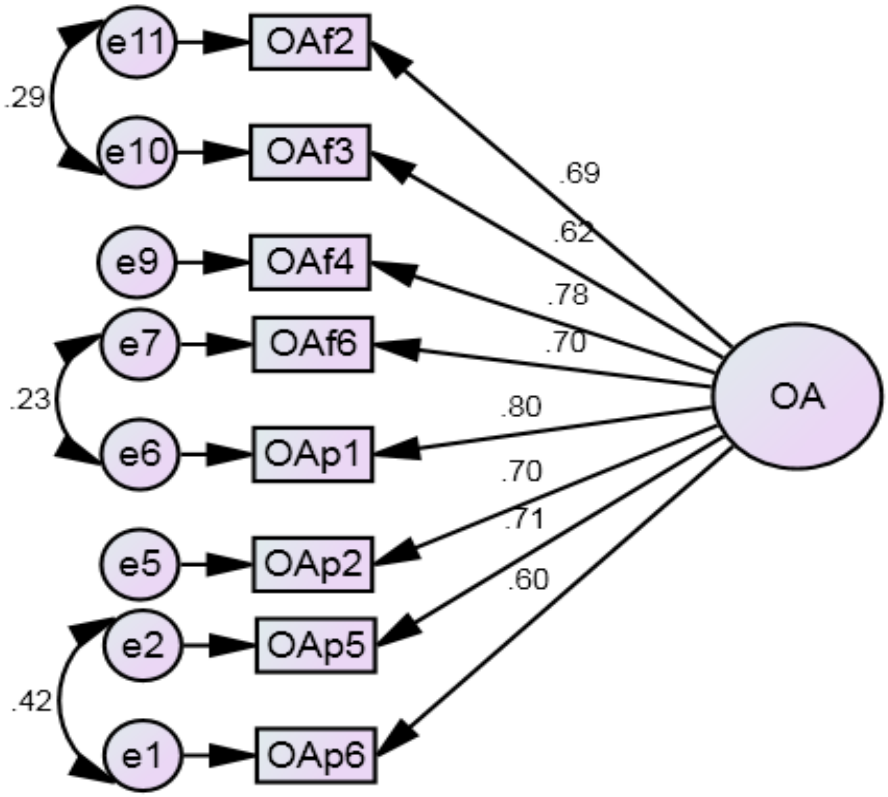



Table 6.35 shows the regression weight estimate and the corresponding standard error and p-value for each of the items.

Table 6.35: Regression Weights for OA

| | Estimate | S.E. | C.R. | P | Label |
|---|---|---|---|---|---|
| OAp6 <--- OA | .587 | .066 | 8.850 | *** | par_1 |
| OAp5 <--- OA | .735 | .067 | 10.930 | *** | par_2 |
| OAp2 <--- OA | .651 | .061 | 10.675 | *** | par_3 |
| OAp1 <--- OA | .736 | .057 | 12.880 | *** | par_4 |
| OAf6 <--- OA | .725 | .069 | 10.550 | *** | par_5 |
| OAf4 <--- OA | .819 | .066 | 12.410 | *** | par_6 |
| OAf3 <--- OA | .650 | .071 | 9.198 | *** | par_7 |
| OAf2 <--- OA | .726 | .069 | 10.480 | *** | par_8 |

All the factor loadings for the eight items are statistically significant. The regression weight for Organisational Ambidexterity (OA) in the prediction of each of the observed items is significantly different from zero, and each of the regression weight estimates for the items is greater than the recommended threshold.

### 6.5.4 Manager Ambidexterity

#### 6.5.4.1 Manager's Explorative Capability

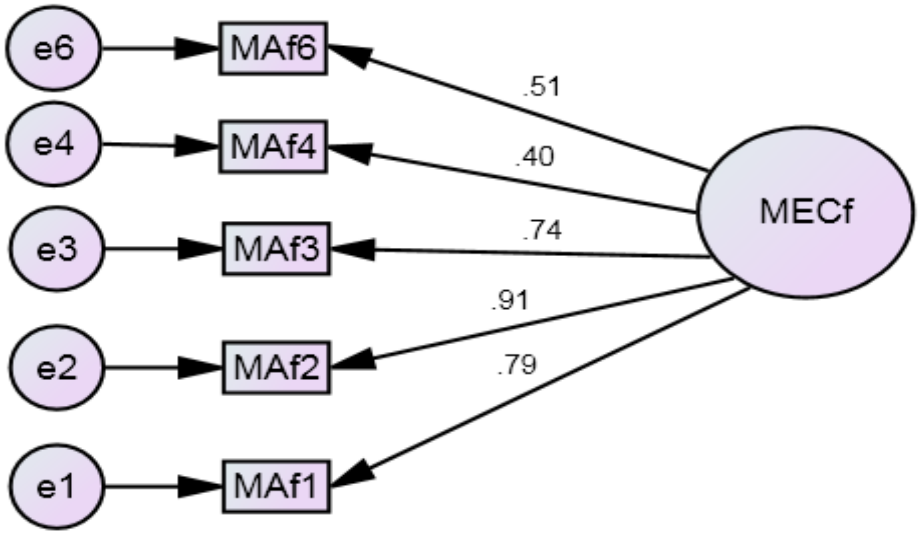
Seven items from the EFA for Manager's Ambidexterity in section 5.5.1.10 were modelled into a latent construct defined as Manager's Explorative Capability (MECf). Two poorly performing items, MAf5 (Activities requiring quite some adaptability of the manager) and MAf7 (Activities that are not yet in company policy), were identified in the initial analysis and subsequently removed. The resulting CFA model suggested a good fit for the remaining items, as shown in Table 6.36.

**Table 6.36: GOF Fit Statistics for Manager's Explorative Capability**

| CMIN/DF | GFI | AGFI | TLI | CFI | RMSEA | PCLOSE |
|---|---|---|---|---|---|---|
| 1.273 | .988 | .963 | .992 | .996 | .037 | .530 |

Figure 6.17 shows the measurement model with standardised factor loadings for the observed variables.

**Figure 6.17: CFA Model for MECf showing Standardised Factor Loadings**




The five items modelled well into the latent construct as revealed in the factor loading estimates for the items. Although the estimates for two of the items slightly fell below

the border line, the resulting CFA model suggested a good fit for these items. Also, these two items fulfil the primary requirement of statistical significance, as shown in Table 6.37.

**Table 6.37: Regression Weights for MECf**

| | Estimate | S.E. | C.R. | P | Label |
|---|---|---|---|---|---|
| MAf1 <--- MECf | .803 | .063 | 12.742 | *** | par_1 |
| MAf2 <--- MECf | .886 | .057 | 15.606 | *** | par_2 |
| MAf3 <--- MECf | .683 | .058 | 11.733 | *** | par_3 |
| MAf4 <--- MECf | .431 | .078 | 5.547 | *** | par_4 |
| MAf6 <--- MECf | .478 | .065 | 7.375 | *** | par_5 |

Table 6.37 presents the regression weight estimate and the corresponding standard error and p-value for each of the items. All the factor loadings for the five items are statistically significant. The regression weight for MECf in the prediction of each of the observed items is significantly different from zero at the 0.001 level (two-tailed). The regression weight estimates for items MAf4 and MAf6 are slightly lower than the recommended threshold of 0.5, but they are included in the construct because they are statistically significant.

#### 6.5.4.2 Manager's Exploitative Capability

Seven items from the EFA for Manager's Ambidexterity in section 5.5.1.10 were modelled into a latent construct defined as Manager's Exploitative Capability (MECp). Two poorly performing items, MAp1 (Activities of which a lot of experience has been accumulated by the manager) and MAp2 (Activities which the manager carries out as if it were routine), were identified in the initial analysis and subsequently removed. The remaining five items modelled well into the latent construct as revealed in the factor loading estimates for the items. The resulting CFA model suggested a good fit for these items, as shown in Table 6.38.

**Table 6.38: GOF Fit Statistics for Manager's Exploitative Capability**

| CMIN/DF | GFI | AGFI | TLI | CFI | RMSEA | PCLOSE |
|---|---|---|---|---|---|---|
| .297 | .998 | .991 | 1.000 | 1.000 | .000 | .947 |

Figure 6.18 shows the measurement model with standardised factor loadings for the observed variables.

**Figure 6.18: CFA Model for MECp showing Standardised Factor Loadings**

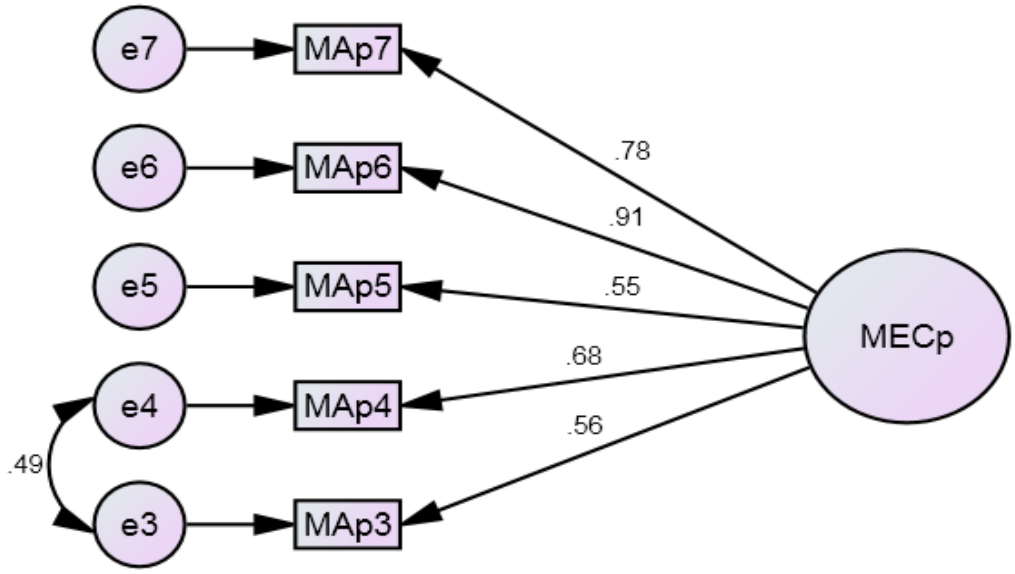



Table 6.39 presents the regression weight estimate and the corresponding standard error and p-value for each of the items.

**Table 6.39: Regression Weights for MECp**

| | Estimate | S.E. | C.R. | P | Label |
|---|---|---|---|---|---|
| MAp3 <--- MECp | .525 | .065 | 8.134 | *** | par_1 |
| MAp4 <--- MECp | .644 | .062 | 10.342 | *** | par_2 |
| MAp5 <--- MECp | .555 | .070 | 7.914 | *** | par_3 |
| MAp6 <--- MECp | .797 | .053 | 15.053 | *** | par_4 |
| MAp7 <--- MECp | .745 | .060 | 12.367 | *** | par_5 |

All the factor loadings for the five items are statistically significant. The regression weight for MECp in the prediction of each of the observed items is significantly different from zero at the 0.001 level (two-tailed). Each of the regression weight estimates for the items is greater than the recommended threshold of 0.5.

### 6.5.4.3 CFA for Manager's Ambidexterity

Initial analysis of first-order modelling of Items from MECf and MECp latent constructs did not yield a suitable model for the data. Thus, a second-order model, discussed earlier in section 6.3, was used for the measurement model for Manager's Ambidexterity (MA), where MECf and MECp represented the first-order factors and

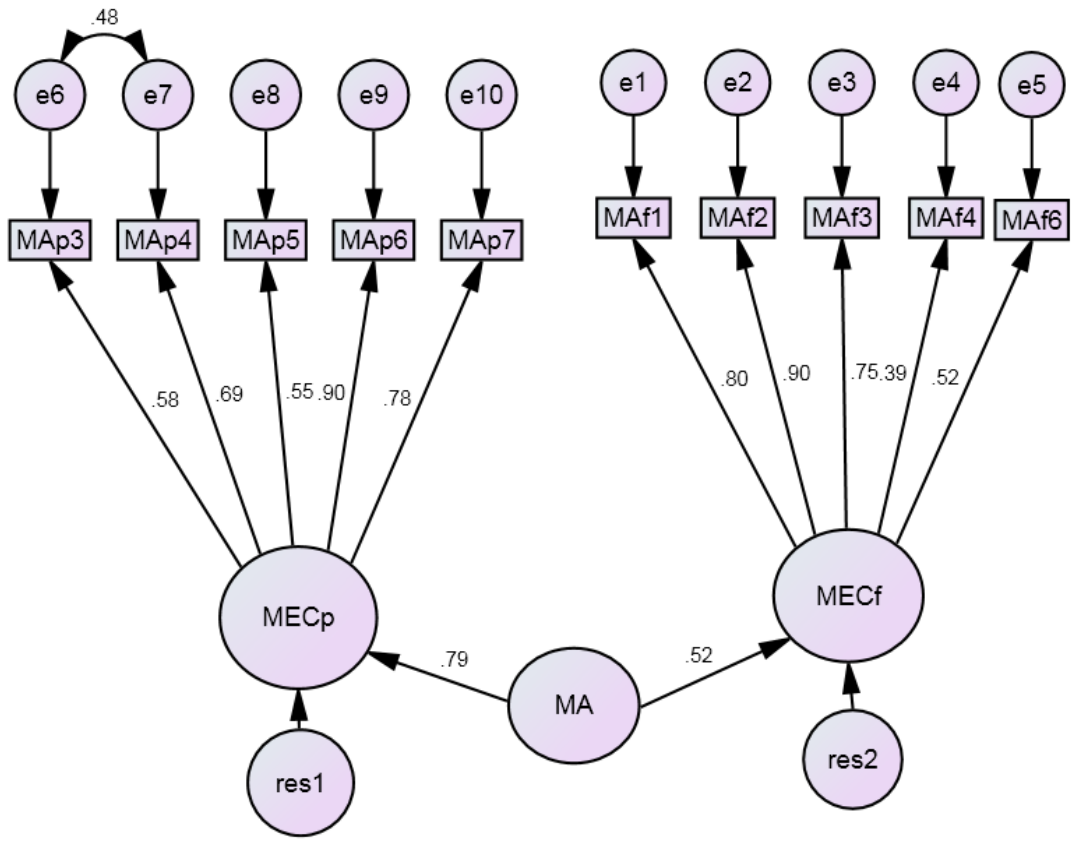
MA represented the second-order construct. The second-order structure suggested a good fit for the MECf and MECp items. Except for the item MAf4, the standardised factor loading estimates are well above the recommended threshold. The resulting second-order CFA model suggested a good fit for these items, as shown in Table 6.40.

**Table 6.40: GOF Fit Statistics for Managerial Ambidexterity**

| CMIN/DF | GFI | AGFI | TLI | CFI | RMSEA | PCLOSE |
|---|---|---|---|---|---|---|
| 1.937 | .941 | .902 | .950 | .964 | .068 | .112 |

Figure 6.19 shows the measurement model with standardised factor loadings for the items in the second-order model.

**Figure 6.19: CFA Model (Second-order Model) for Managerial Ambidexterity**



### 6.5.5 Customer Engagement

Thirteen items from the EFA in section 5.5.1.11 were modelled into a latent construct defined as Customer Engagement (CENG). During the initial stages of modelling the items into CENG, five items were identified and removed in order to get a good fit. The remaining eight items modelled well into the latent construct as revealed in the factor loading estimate for each of the items. The resulting CFA model suggested a good fit for these items, as shown in Table 6.41.

**Table 6.41: GOF Fit Statistics for Customer Engagement**

| CMIN/DF | GFI | AGFI | TLI | CFI | RMSEA | PCLOSE |
|---|---|---|---|---|---|---|
| 2.054 | .960 | .915 | .959 | .975 | .072 | .131 |

Figure 6.20 shows the measurement model with standardised factor loadings for the observed variables.

**Figure 6.20: CFA Model for Customer Engagement**

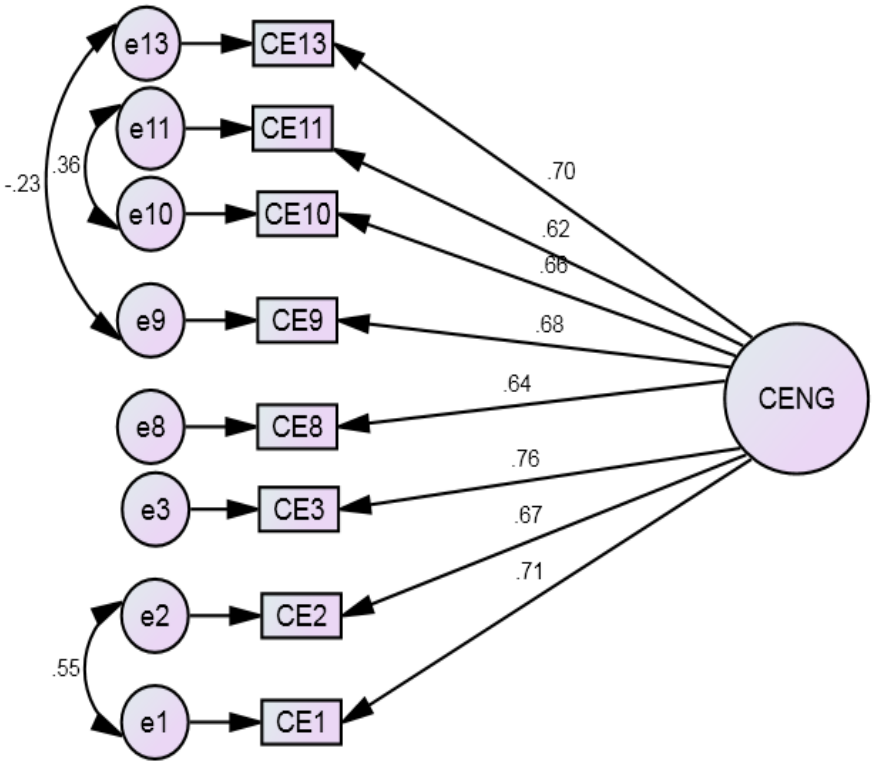



Table 6.42 presents the regression weight estimate and the corresponding standard error and p-value for each of the items.

**Table 6.42: Regression Weights for Customer Engagement**

| | Estimate | S.E. | C.R. | P | Label |
|---|---|---|---|---|---|
| CE1 <--- CENG | .757 | .069 | 10.933 | *** | par_1 |
| CE2 <--- CENG | .614 | .061 | 10.022 | *** | par_2 |
| CE3 <--- CENG | .734 | .061 | 12.073 | *** | par_3 |
| CE8 <--- CENG | .638 | .067 | 9.557 | *** | par_4 |
| CE9 <--- CENG | .658 | .066 | 10.037 | *** | par_5 |
| CE10 <--- CENG | .660 | .066 | 9.968 | *** | par_6 |
| CE13 <--- CENG | .755 | .072 | 10.471 | *** | par_7 |
| CE11 <--- CENG | .574 | .063 | 9.066 | *** | par_8 |

All the factor loadings for the eight items are statistically significant. The regression weight for the construct in the prediction of each of the observed items is significantly different from zero at the 0.001 level (two-tailed). Also, the regression weight estimate for each of the items is greater than the recommended threshold of 0.5.

### 6.5.6 Organisational Performance

Six items from the EFA in section 5.5.1.12 were modelled into a latent construct defined as Organisational Performance. During the initial stages of modelling the construct, one item, Sales Performance (SP), was identified and removed in order to get a good fit. The remaining five items modelled well into the latent construct as revealed in the factor loading estimate for each of the items. The resulting CFA model suggested a good fit for these items, as shown in Table 6.43.

**Table 6.43: GOF Fit Statistics for Organisational Performance**

| CMIN/DF | GFI | AGFI | TLI | CFI | RMSEA | PCLOSE |
|---|---|---|---|---|---|---|
| 1.466 | .991 | .956 | .993 | .998 | .048 | .414 |

Figure 6.21 shows the measurement model with standardised factor loadings for the observed variables.

**Figure 6.21: CFA Model for Organisational Performance**

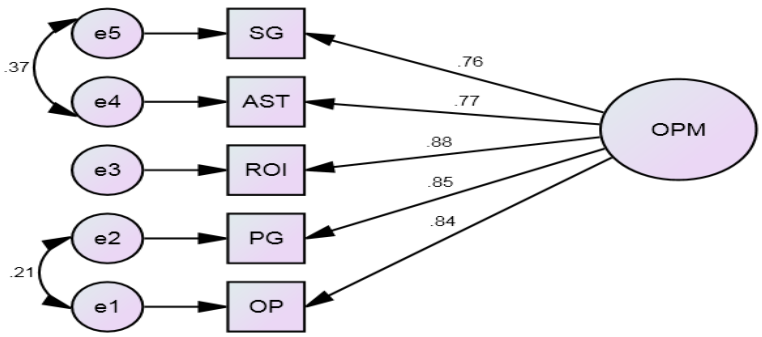


Table 6.44 shows the regression weight estimate and the corresponding standard error and p-value for each of the items.

**Table 6.44: Regression Weights for Organisational Performance**

| | | | Estimate | S.E. | C.R. | P | Label |
|---|---|---|---|---|---|---|---|
| OP | <--- | OPM | .839 | .060 | 13.899 | *** | par_1 |
| PG | <--- | OPM | .824 | .058 | 14.285 | *** | par_2 |
| ROI | <--- | OPM | .837 | .055 | 15.119 | *** | par_3 |
| AST | <--- | OPM | .721 | .058 | 12.393 | *** | par_4 |
| SG | <--- | OPM | .700 | .058 | 12.112 | *** | par_5 |

All the factor loadings for the five items are statistically significant. The regression weight for the construct in the prediction of each of the observed items is significantly different from zero at the 0.001 level (two-tailed), and each of the regression weight estimates for the items is greater than the recommended threshold of 0.5.

## 6.6 Reliability and Validity of Constructs

Reliability of a construct can be described as the correlation between the items measuring the construct (Cohen et al., 2003). However, there are some limitations associated with assessing reliability and validity using the correlations between the items. This is because correlations between the observed items do not account for the likely effects of the latent constructs and the measurement error (Bollen, 1989). According to Baumgartner and Homburg (1996), structural equation modelling provides a better reliability estimate, described as Construct or Composite Reliability. Composite Reliability, an indicator of convergent validity, is equivalent to Cronbach's alpha but it is often used in conjunction with structural equation models (Hair et al., 2010).

Construct validity shows the extent to which the survey items reflect the theoretical latent construct they intend to measure. According to Gaskin (2012b), convergent validity and discriminant validity are important components of construct validity. Based on the suggestions of Gaskin (2012b), statistical analyses to ensure the validity of the research constructs are as follows:

- The minimum value for standardised loading estimates should be 0.5.
- The minimum value of Average Variance Extracted should be 0.5 to suggest adequate convergent validity.

- The minimum value for construct reliability should be 0.7 to indicate adequate convergence or internal consistency.

In order to provide evidence of discriminant validity, the Variance Extracted for two factors should exceed the square of the correlation between the two factors. Composite Reliability (CR) is calculated from the square of the sum of standardised factor loading estimate ($\lambda$) for each item and the sum of the item's error ($\delta$); while Average Variance Extracted is computed from the sum of the square of standardised factor loading estimate ($\lambda^2$) for each item and the sum of the item's error ($\delta$), as shown in Equations 6.1 and 6.2 (Hair et al., 2010; Ifie, 2010; Ping, 2004; Bagozzi and Yi, 1988; Fornell and Larcker, 1981).

$$\boldsymbol{Composite\ Reliability\ (CR)} = \frac{\left(\sum_{i=1}^{n} \lambda_i\right)^2}{\left(\sum_{i=1}^{n} \lambda_i\right)^2 + \left(\sum_{i=1}^{n} \delta_i\right)} \qquad \text{Equation 6.1}$$

$$\boldsymbol{Average\ Varience\ Extracted\ (AVE)} = \frac{\sum_{i=1}^{n} \lambda_i{}^2}{\left(\sum_{i=1}^{n} \lambda_i{}^2\right) + \left(\sum_{i=1}^{n} \delta_i\right)} \qquad \text{Equation 6.2}$$

Table 6.45 gives the summary of the terms and the corresponding requirements for each of the terms for the validity of the constructs.

**Table 6.45: Requirements for Construct Validity**

| | | Description | Estimation Method / Rule of Thumb |
|---|---|---|---|
| **1** | Convergent Validity | Items in the constructs should converge or have a high proportion of variance in common. | Factor loadings should be statistically significant and recommended minimum for standardised loading estimate is 0.5.<br>AVE of 0.5 or higher and CR of 0.7 or higher suggest adequate convergence. |
| **2** | Discriminant Validity | The extent to which a construct is truly distinct from other constructs. | AVE should be greater than the squared correlation estimate(s) between the construct and any other constructs. Also, the presence of high cross-loadings indicates poor discriminant validity. |
| **3** | Nomological Validity | The degree to which the construct correlates in a way it should within a system of related constructs | Tested by examining whether the correlations among the constructs in a measurement theory make sense. |
| **4** | Face Validity | Focuses on the content or the meaning of the items | Validity should be established prior to the theoretical testing. |

Adapted from Hair et al., 2010; Ping, 2004; Bagozzi and Yi, 1988; Fornell and Larcker, 1981).

### 6.6.1 Reliability and Validity of Constructs in Shop-floor Staff Survey

Table 6.46 shows the required parameters, $\lambda$ and $\delta$, to compute the CR and AVE by using equations 6.1 and 6.2 respectively for: the Organic Structure (ORGS); the Clan Culture (CLANC); the Adhocracy Culture (ADHC); and the Employee Level of Engagement (EENG); Employee Passive Ambidexterity (EPA); and Employee Active Ambidexterity (EAA).

**Table 6.46: Parameters to Compute Composite Reliability and Average Variance Extracted for the Constructs in Shop-floor Staff Survey**

| Items | ORGS: λ (δ) | CLANC: λ (δ) | ADHC: λ (δ) | KSCC: λ (δ) | EENG: λ (δ) | EPA: λ (δ) | EAA: λ (δ) |
|---|---|---|---|---|---|---|---|
| ORG1 | .52 (.063) | | | | | | |
| ORG2 | .54 (.056) | | | | | | |
| ORG3 | .83 (.063) | | | | | | |
| ORG4 | .57 (.066) | | | | | | |
| ORG6 | .57 (.069) | | | | | | |
| CLA1 | | .47 (.069) | | | | | |
| CLA2 | | .60 (.060) | | | | | |
| CLA3 | | .70 (.047) | | | | | |
| CLA4 | | .71 (.051) | | | | | |
| CLA5 | | .68 (.054) | | | | | |
| ADH2 | | | .69 (.051) | | | | |
| ADH5 | | | .63 (.049) | | | | |
| ADH6 | | | .66 (.058) | | | | |
| ADH1 | | | .68 (.055) | | | | |
| KSC4 | | | | .65 (.052) | | | |
| KSC3 | | | | .65 (.056) | | | |
| KSC2 | | | | .69 (.053) | | | |
| KSC1 | | | | .77 (.057) | | | |
| EE9 | | | | | .68 (.061) | | |
| EE1 | | | | | .69 (.051) | | |
| EE4 | | | | | .61 (.057) | | |
| EE3 | | | | | .56 (.062) | | |
| EE5R | | | | | .46 (.063) | | |
| EE6R | | | | | .46 (.066) | | |
| PEAp4 | | | | | | .91 (.038) | |
| PEAp3 | | | | | | .74 (.041) | |
| PEAp2 | | | | | | .75 (.040) | |
| PEAf5 | | | | | | .71 (.051) | |
| PEAf4 | | | | | | .81 (.044) | |
| PEAf1 | | | | | | .81 (.044) | |
| AEAp4 | | | | | | | .81 (.058) |
| AEAp3 | | | | | | | .77 (.061) |
| AEAp1 | | | | | | | .73 (.060) |
| AEAf4 | | | | | | | .83 (.056) |
| AEAf2 | | | | | | | .71 (.060) |
| AEAf1 | | | | | | | .76 (.057) |

Figure 6.22 shows the structural model used to estimate the correlation between the constructs in the Shop-floor Staff Survey, while Table 6.47 shows the GOF statistics for the model.

**Figure 6.22: Shop-floor Staff Structural Model of Standardised Correlation Estimates between the constructs**

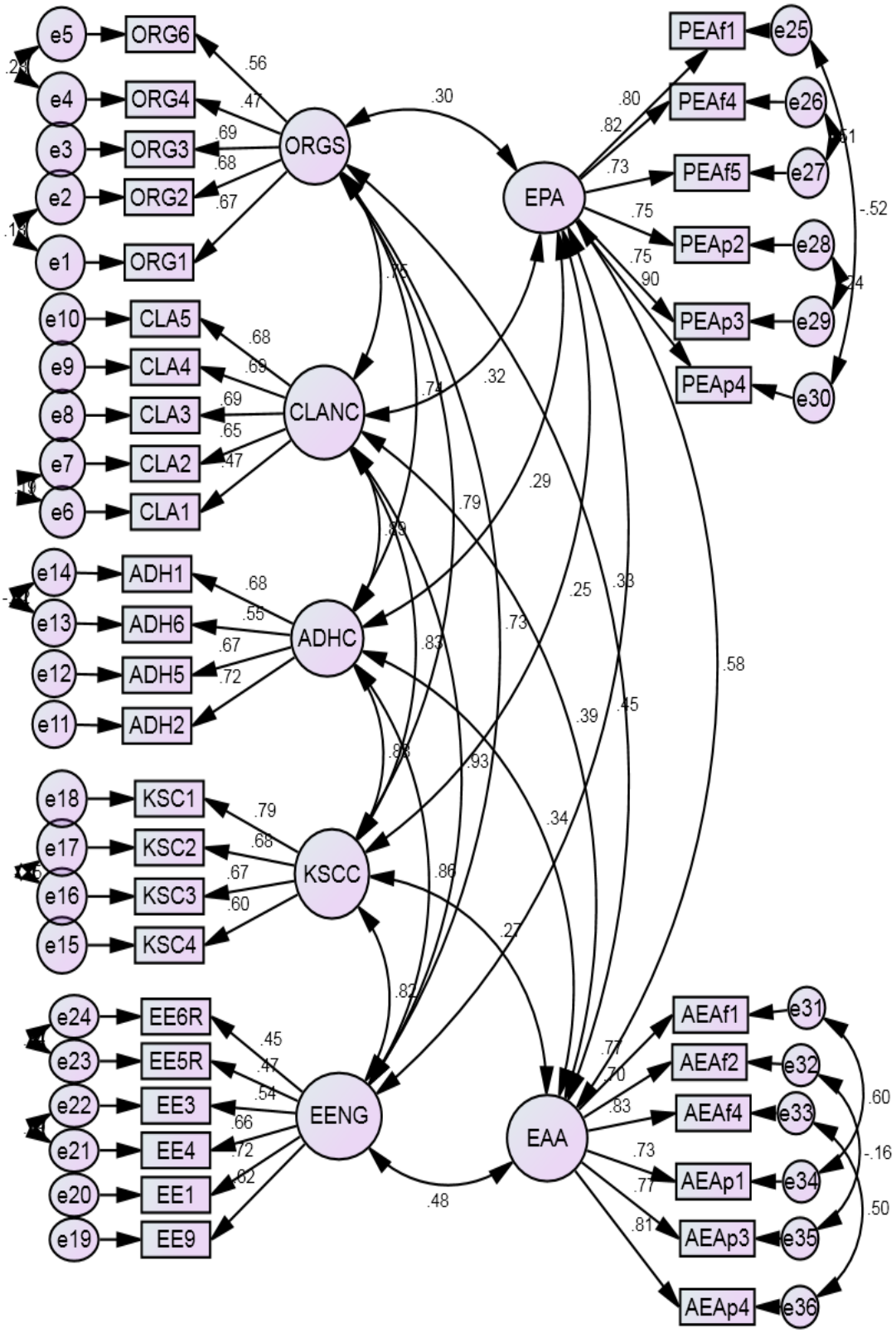


**Table 6.47: GOF statistics for Shop-floor Staff Structural Model for Correlation Estimates between the Constructs**

| CMIN/DF | GFI | AGFI | TLI | CFI | RMSEA | PCLOSE |
|---|---|---|---|---|---|---|
| 2.043 | .859 | .833 | .911 | .921 | .051 | .309 |

The value of GFI, AGFI, TLI and CFI exceeds the recommended minimum permissible threshold of 0.80; PCLOSE is greater than the recommended minimum threshold of 0.05, while RMSEA is less than the recommended maximum value of 0.10.

Table 6.48 shows the correlation estimates between the constructs.

**Table 6.48: Correlations Estimates between Shop-floor Staff Survey Constructs from AMOS**

| Correlations | | | Estimate |
|---|---|---|---|
| ORGS | <--> | CLANC | .745 |
| ORGS | <--> | ADHC | .745 |
| ORGS | <--> | KSCC | .795 |
| ORGS | <--> | EENG | .732 |
| ORGS | <--> | EPA | .295 |
| ORGS | <--> | EAA | .330 |
| CLANC | <--> | ADHC | .886 |
| CLANC | <--> | KSCC | .828 |
| CLANC | <--> | EENG | .931 |
| CLANC | <--> | EPA | .319 |
| CLANC | <--> | EAA | .387 |
| ADHC | <--> | KSCC | .876 |
| ADHC | <--> | EENG | .859 |
| ADHC | <--> | EPA | .288 |
| KSCC | <--> | EENG | .816 |
| KSCC | <--> | EPA | .249 |
| KSCC | <--> | EAA | .270 |
| EENG | <--> | EPA | .449 |
| EENG | <--> | EAA | .478 |
| EPA | <--> | EAA | .579 |
| ADHC | <--> | EAA | .340 |

Table 6.49 shows the CR (from Equation 6.1) for each construct, and also compares the AVE (from Equation 6.2) with the square of the correlation estimates between the constructs in the Shop-floor Staff Survey.

**Table 6.49: Comparing the AVE with the Square of the Correlation Estimates for Shop-floor Staff Constructs**

| | **CR** | **AVE** | ORGS | CLANC | ADHC | KSCC | EENG | EPA | EAA |
|---|---|---|---|---|---|---|---|---|---|
| **CR** | | | **.9666** | **.9726** | **.9708** | **.9722** | **.9708** | **.9886** | **.9837** |
| **AVE** | | | **.8571** | **.8788** | **.8926** | **.8977** | **.8505** | **.9357** | **.9098** |
| ORGS | **.9666** | **.8571** | 1 | | | | | | |
| CLANC | **.9726** | **.8788** | .5550 | 1 | | | | | |
| ADHC | **.9708** | **.8926** | .5550 | 0.7850 | 1 | | | | |
| KSCC | **.9722** | **.8977** | .6320 | 0.6856 | 0.7674 | 1 | | | |
| EENG | **.9708** | **.8505** | .5358 | 0.8668 | 0.7379 | 0.6659 | 1 | | |
| EPA | **.9886** | **.9357** | .0870 | 0.1018 | 0.0829 | 0.0620 | 0.2016 | 1 | |
| EAA | **.9837** | **.9098** | .1089 | 0.1498 | 0.1156 | 0.0729 | 0.22845 | .3352 | 1 |

### 6.6.2 Discussion of Results of Construct Validity for the Research Variables in the Shop-floor Staff Survey

#### 6.6.2.1 Convergent Validity

As shown in the CFA for the Shop-floor Staff constructs in section 6.4, all the items in each of the measurement models are statistically significant as required. Although the standardised factor loadings for three out of 36 items in the structural model are slightly below the recommended threshold of 0.5 (Figure 6.22), they do not have any adverse effect on the convergent validity of the related constructs. Also, all the three items are statistically significant. Also, the CR for each of the constructs is higher than the recommended threshold of 0.7. AVE is another important estimate that supports the convergence of the constructs; the AVE for each of the constructs is higher than the recommended threshold of 0.5.

#### 6.6.2.2 Discriminant Validity

In order to provide good evidence of discriminant validity, AVE for each construct should be greater than the squared correlation estimate(s) between the construct and any other constructs (Hair et al., 2010). By considering Table 6.49, Level of Employee Engagement (EENG) is the only construct which has a squared correlation estimate that is slightly higher than AVE in its correlation relationship with only one construct, Clan Culture. The implication of this is that Clan Culture (CLANC) is highly correlated to EENG. Based on the previous findings, this does not indicate any problem with the construct because high correlation that exists between CLANC and EENG indicates both items are related. This invariably supports one of the research hypotheses; although, this is still subject to further analysis in the next chapter. Thus, this does not indicate a discriminant validity problem. The AVE for constructs ORGS, CLANC, ADHC, KSCC, EPA and EAA are greater than any of the corresponding squared correlation estimates. This implies that each of these constructs explains more of the variance in its own items than it does with another construct, and satisfies the condition for discriminant validity (Hair et al., 2010).

#### 6.6.2.3 Nomological Validity

As revealed in Table 6.45, section 6.6, the necessary step to investigate nomological validity for research constructs is to examine the matrix of construct correlations. As shown in Table 6.48, the correlations between the research constructs in the shop-floor staff survey make sense, and they are in the expected directions. Thus, the result shows appropriate nomological validity for the constructs in the shop-floor staff survey.

### 6.6.3 Reliability and Validity of Constructs in Managerial Staff Survey

Table 6.50 shows the required parameters, $\lambda$ and $\delta$, to compute the CR and AVE using equations 6.1 and 6.2 respectively for: Organisation Innovation Capability (ORGIN); Marketing Innovation Capability (MARIN); Organisational Ambidexterity (OA), combining Organisational Explorative and Exploitative Capabilities; Manager's Ambidexterity (MA), combining Manager's Explorative and Exploitative Capabilities; Customer Engagement (CENG); and Organisational Performance Measure (OPM).

**Table 6.50: Parameters to Compute Composite Reliability and Average Variance Extracted for the Constructs in Managerial Staff Survey**

| Items | ORGIN: λ (δ) | MARIN: λ (δ) | OA: λ (δ) | MA: λ (δ) | CENG: λ (δ) | OPM: λ (δ) |
|---|---|---|---|---|---|---|
| OI2 | .81 (.058) | | | | | |
| OI5 | .80 (.062) | | | | | |
| OI1 | .75 (.063) | | | | | |
| OI7 | .78 (.065) | | | | | |
| OI4 | .78 (.063) | | | | | |
| OI9 | .70 (.063) | | | | | |
| OI10 | .69 (.058) | | | | | |
| OI8 | .70 (.063) | | | | | |
| OI3 | .68 (.069) | | | | | |
| OI6 | .65 (.068) | | | | | |
| MI2 | | .77 (.062) | | | | |
| MI13 | | .78 (.063) | | | | |
| MI11 | | .83 (.061) | | | | |
| MI8 | | .70 (.068) | | | | |
| MI10 | | .74 (.062) | | | | |
| MI1 | | .65 (.073) | | | | |
| MI12 | | .68 (.065) | | | | |
| MI6 | | .67 (.068) | | | | |
| MI9 | | .60 (.062) | | | | |
| OAp6 | | | .60 (.066) | | | |
| OAp5 | | | .71 (.067) | | | |
| OAp2 | | | .70 (.061) | | | |
| OAp1 | | | .80 (.057) | | | |
| OAf6 | | | .70 (.069) | | | |
| OAf4 | | | .78 (.066) | | | |
| OAf3 | | | .62 (.071) | | | |
| OAf2 | | | .69 (.069) | | | |
| MAf1 | | | | .80 (.071) | | |
| MAf2 | | | | .90 (.083) | | |
| MAf3 | | | | .75 (.077) | | |
| MAf4 | | | | .39 (.098) | | |
| MAf6 | | | | .52 (.082) | | |
| MAp3 | | | | .58 (.081) | | |
| MAp4 | | | | .69 (.120) | | |
| MAp5 | | | | .55 (.164) | | |
| MAp6 | | | | .90 (.177) | | |
| MAp7 | | | | .78 (.173) | | |
| CE1 | | | | | .71 (.069) | |
| CE2 | | | | | .67 (.061) | |
| CE3 | | | | | .76 (.061) | |
| CE8 | | | | | .64 (.067) | |
| CE9 | | | | | .68 (.066) | |
| CE10 | | | | | .66 (.066) | |
| CE11 | | | | | .62 (.063) | |
| CE13 | | | | | .70 (.072) | |
| OP | | | | | | .84 (.060) |
| PG | | | | | | .85 (.058) |
| ROI | | | | | | .88 (.055) |
| AST | | | | | | .77 (.058) |
| SG | | | | | | .76 (.058) |

Figure 6.23 shows the structural model used to estimate the correlation between the constructs in the Managerial Staff Survey, while Table 6.51 shows the GOF statistics for the model.

**Figure 6.23: Managerial Staff Structural Model of Standardised Correlation Estimates between the constructs**

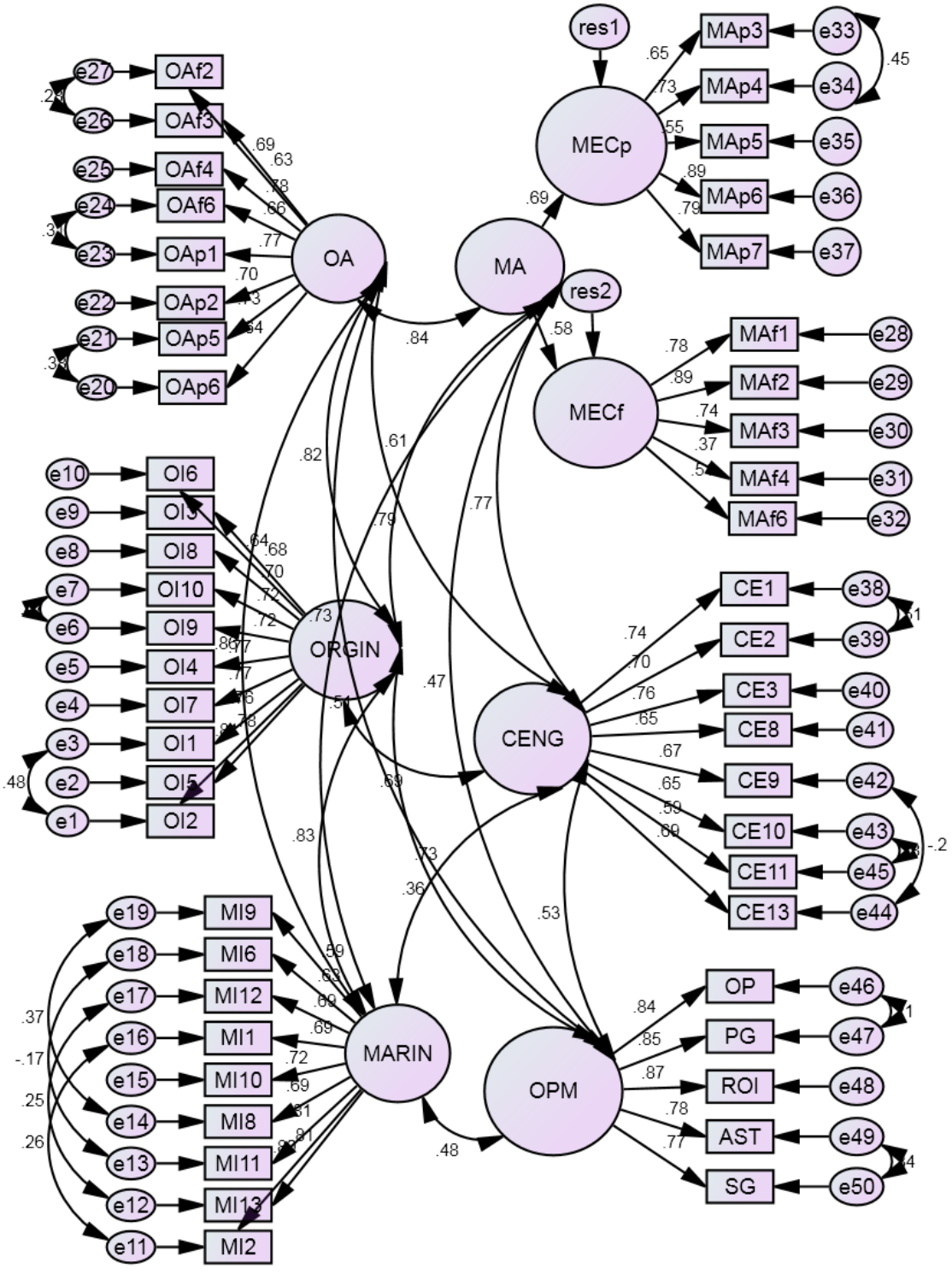


**Table 6.51: GOF statistics for Managerial Staff Structural Model for Correlation Estimates between the Constructs**

| CMIN/DF | GFI | AGFI | TLI | CFI | RMSEA | PCLOSE |
|---|---|---|---|---|---|---|
| 1.791 | .730 | .699 | .854 | .864 | .063 | .000 |

Except for the values of GFI and AGFI which are slightly below the border line, the value TLI and CFI exceeds the recommended minimum permissible threshold of 0.80; while CMIN/DF is less than the recommended maximum threshold of 5, and RMSEA is also less than the recommended maximum value of 0.10. Table 6.52 shows the correlation estimates between the constructs.

**Table 6.52: Correlations Estimates between Managerial Staff Survey Constructs from AMOS**

| Correlations | | | Estimate |
|---|---|---|---|
| ORGIN | <--> | MARIN | .834 |
| ORGIN | <--> | OA | .817 |
| ORGIN | <--> | MA | .607 |
| ORGIN | <--> | CENG | .686 |
| ORGIN | <--> | OPM | .363 |
| MARIN | <--> | OA | .863 |
| MARIN | <--> | MA | .735 |
| MARIN | <--> | CENG | .732 |
| MARIN | <--> | OPM | .484 |
| OA | <--> | MA | .844 |
| OA | <--> | CENG | .787 |
| OA | <--> | OPM | .508 |
| MA | <--> | CENG | .770 |
| MA | <--> | OPM | .468 |
| CENG | <--> | OPM | .532 |

Table 6.53 shows the CR (from Equation 6.1), and also compares the AVE (from Equation 6.2) with the square of the correlation estimates between the constructs in the Managerial Staff Survey.

**Table 6.53: Comparing the AVE with the square of the Correlation Estimates for Managerial Staff Constructs**

| | **CR** | **AVE** | ORGIN | MARIN | OA | MA | CENG | OPM |
|---|---|---|---|---|---|---|---|---|
| **CR** | | | **.9884** | **.9860** | **.9835** | **.9766** | **.9826** | **.9831** |
| **AVE** | | | **.8955** | **.8878** | **.8826** | **.8152** | **.8761** | **.9211** |
| ORGIN | **.9884** | **.8955** | 1 | | | | | |
| MARIN | **.9860** | **.8878** | 0.6956 | 1 | | | | |
| OA | **.9835** | **.8826** | 0.6675 | 0.7448 | 1 | | | |
| MA | **.9766** | **.8152** | 0.3684 | 0.5402 | 0.7123 | 1 | | |
| CENG | **.9826** | **.8761** | 0.4706 | 0.5358 | 0.6194 | 0.5929 | 1 | |
| OPM | **.9831** | **.9211** | 0.1318 | 0.2343 | 0.2581 | 0.2190 | 0.2830 | 1 |

### 6.6.4 Discussion of Results of Construct Validity for the Research Variables in the Managerial Staff Survey

#### 6.6.4.1 Convergent Validity

As shown in the CFA for the Managerial Staff constructs in section 6.5, all the items in each of the measurement models are statistically significant as required. Although the standardised factor loadings for one item (MAf4) out of 50 items in the structural model is slightly below the recommended threshold of 0.5 (Figure 6.23), it does not have any adverse effect on the convergent validity of Manager's Explorative Capability (MECf) and the item is also statistically significant. Also, the CR for each of the constructs is higher than the recommended threshold of 0.7. AVE is another important estimate that supports the convergence of the constructs; the AVE for each of the constructs is higher than the recommended threshold of 0.5.

#### 6.6.4.2 Discriminant Validity

In order to provide good evidence of discriminant validity, AVE for each construct should be greater than the squared correlation estimate(s) between the construct and any other constructs (Hair et al., 2010). By considering Table 6.53, the AVE for each of the constructs in the managerial staff survey is greater than any of the corresponding squared correlation estimates. This implies that each of these constructs explains more of the variance in its own items than it does with another construct, and thus, satisfies the condition for discriminant validity (Hair et al., 2010).

#### 6.6.4.3 Nomological Validity

As revealed in Table 6.45, section 6.6, the necessary step to investigate nomological validity for research constructs is to examine the matrix of construct correlations. As shown in Table 6.52, the correlations between the research constructs in the managerial staff survey make sense, and they are in the expected directions. Thus, the result shows appropriate nomological validity for the constructs in the managerial staff survey.

## 6.7 Summary of Chapter

This chapter presented the confirmatory factor analysis of the constructs in the research surveys for the shop-floor employees and the managerial staff. The chapter also discussed the rationale behind the choice of structural equation modelling for CFA and structural relationships and presented various good-of-fitness indices and their corresponding thresholds needed to validate the model fitness and the research constructs. CFA analyses, the measurement models, and the corresponding level of fit achieved for each of the constructs were presented. Reliability and validity for the constructs were assessed through the Composite Reliability, the Average Variance Extracted, the correlations between the constructs, the standardised factor loading estimates ($\lambda^2$) and the item's error ($\delta$). These estimates facilitated the determination of necessary relationships needed to ascertain convergent validity, discriminant validity and nomological validity for each of the research constructs.

Results of the analyses showed that the established constructs in the shop-floor employee and managerial staff surveys yielded the required reliability and validity in the measurement of the research constructs. These analyses identify and eliminate item redundancy, and also enable reduction of time taken to complete questionnaires in the future use. In sum, this chapter presents the analysis of the measurement models for the constructs in the managerial staff and the shop-floor staff surveys with their corresponding goodness-of-fit. The analyses in this chapter also prepare the measurement models and validate their suitability for structural models and relationships, covered later in chapter 7.

# Chapter 7

# 7 Structural Modelling and Research Constructs Relationships: Analysis and Discussions

## 7.1 Introduction

This study has examined organisational context antecedents of Organisational and Marketing Innovations (OMIs) capabilities, Organisational and Employee Ambidexterity. These constructs have been identified as crucial to sustainable organisational performance. This chapter details the relationships between these constructs in an organisational context by providing statistical evidence in support of the research hypotheses proposed in chapters 2 and 4. The chapter will show relevant antecedents and the strength of their influence on Employee Engagement; Customer Engagement; OMIs capabilities; Employee and Organisational Ambidexterity; and Organisational Performance. The measurement models presented in the previous chapter were used in the design and analysis of the structural models; each of which corresponds to the research hypothesis and identifies the relationship between the latent variables.

In addition, the chapter details the implications of the structural models; strengths of relationships and their significance; and their corresponding goodness-of-fit. Effects of individual attributes on managerial and shop-floor staff ambidexterity were also examined. According to Hair et al. (2010), the overall fit of the structural model should be assessed using the $\chi^2$ value and at least one absolute fit index and one incremental fit index. Following the recommendation of Hair et al. (2010) and Gaskin (2012a), the goodness-of-fit of the structural models presented in this chapter is based on the multiple fit indices summarised in Table 7.1.

**Table 7.1: Goodness-of-Fit Indices for Research Structural Models**

| Fit Indices | Examples (Required Thresholds) |
|---|---|
| The $\chi^2$ value and the associated degree of freedom (DF) | CMIN/DF ( < 5) |
| One absolute | GFI ( > 0.90) or RMSEA ( < 0.10) or PCLOSE ( > 0.05) |
| One incremental | CFI or TLI ( > 0.90) |
| One goodness-of-fit | GFI, CFI or TLI ( > 0.90) |
| One badness-of-fit | RMSEA ( < 0.10) |

Adapted from Hair et al. (2010) and Gaskin (2012a)

It is important to note that "the quality of fit depends heavily on model characteristics including sample size and model complexity" (Hair et al., 2010 p. 678); while strict standards of fit are required for simple models with small samples, more complex models with large samples should not be subjected to the same strict standards. Thus, a cut-off value of 0.95 on key fit indices, such as GFI, CFI, TLI, may be unrealistic for a model with a large sample of data (Hair et al., 2010).

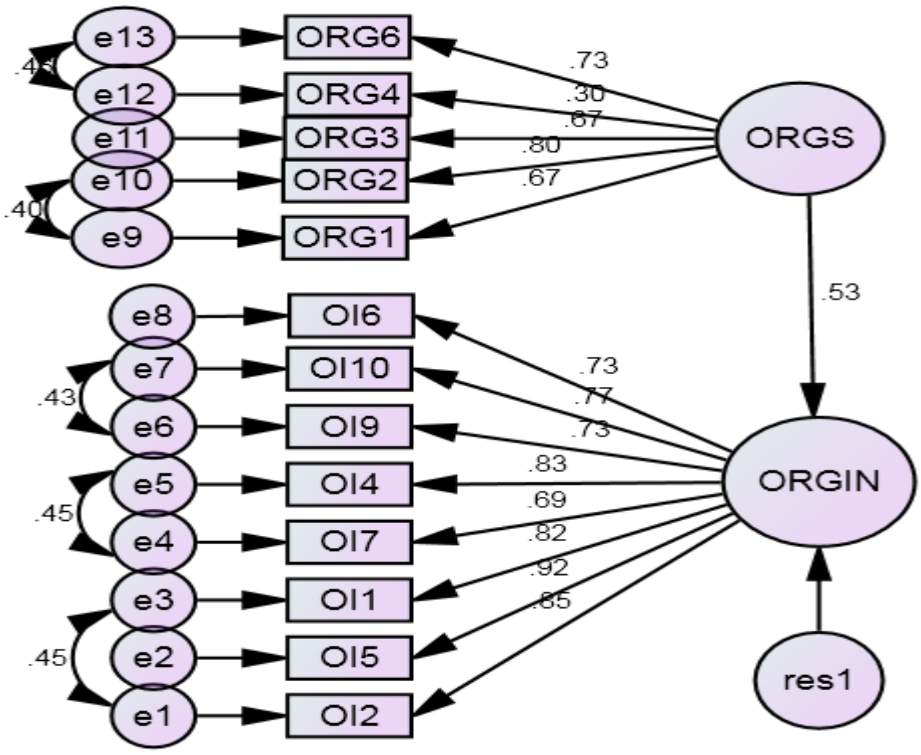
### 7.2 Testing Structural Relationships and Validating the Research Hypotheses

In addition to having good models for the structural relationships among the research constructs, it is also important that the parameter estimates are: (1) statistically significant; (2) in the predicted direction (> 0 for positive relationship, and < 0 for negative relationship); and (3) nontrivial, checked using the completely standardised loading estimates (Hair et al., 2010).

#### 7.2.1 Research Hypothesis 1

H1 proposed that an Organic Structure will promote the development of an Organisational Innovation capability. Figure 7.1 shows the structural relationship between the two measurement models, Organic Structure (ORGS) and Organisational Innovation capability (ORGIN), in H1.

**Figure 7.1: Structural Model Validating the Research Hypothesis 1**



The standardised regression weights are shown in Figure 7.1 for all the observed items in the exogenous (independent) and endogenous (dependent) latent variables. The standardised regression weight estimate (SRWE) of 0.53 indicates a positive relationship between the two latent variables, and also shows the strength of effect of Organic Structure (ORGS) on Organisational Innovation capability (ORGIN). The summary of fit indices for the structural model validating H1 is given in Table 7.2.

**Table 7.2: Multiple Fit Indices for Structural Model validating H1**

| CMIN/DF | GFI | TLI | CFI | RMSEA | PCLOSE |
|---|---|---|---|---|---|
| 1.234 | 0.855 | 0.964 | 0.973 | 0.063 | 0.322 |

The model was assessed using multiple fit indices and satisfied the requirements for: the $\chi^2$ value and the associated DF (CMIN/DF = 1.234); one absolute fit index (PCLOSE = 0.322); one incremental fit index (CFI = 0.973); one goodness-of-fit index (TLI = 0.964); and one badness-of-fit index (RMSEA = 0.063). This shows that the model fits the data exceptionally well, thus supporting H1. Table 7.3 shows the regression weight estimate and the corresponding standard error and p-value for each of the items.

**Table 7.3: Regression Weights for Structural Model validating H1**

| | | | Estimate | S.E. | C.R. | P | Label |
|---|---|---|---|---|---|---|---|
| ORGIN | <--- | ORGS | .365 | .099 | 3.677 | *** | par_18 |
| OI2 | <--- | ORGIN | 1.000 | | | | |
| OI5 | <--- | ORGIN | 1.040 | .110 | 9.477 | *** | par_1 |
| OI1 | <--- | ORGIN | 1.003 | .094 | 10.650 | *** | par_2 |
| OI7 | <--- | ORGIN | .808 | .135 | 5.970 | *** | par_3 |
| OI4 | <--- | ORGIN | .998 | .126 | 7.909 | *** | par_4 |
| OI9 | <--- | ORGIN | .846 | .129 | 6.577 | *** | par_5 |
| OI10 | <--- | ORGIN | .846 | .119 | 7.100 | *** | par_6 |
| OI6 | <--- | ORGIN | .798 | .122 | 6.539 | *** | par_7 |
| ORG1 | <--- | ORGS | .489 | .098 | 4.976 | *** | par_11 |
| ORG2 | <--- | ORGS | .568 | .089 | 6.407 | *** | par_12 |
| ORG3 | <--- | ORGS | .478 | .091 | 5.228 | *** | par_13 |
| ORG4 | <--- | ORGS | .231 | .111 | 2.079 | .038 | par_14 |
| ORG6 | <--- | ORGS | .601 | .105 | 5.733 | *** | par_15 |

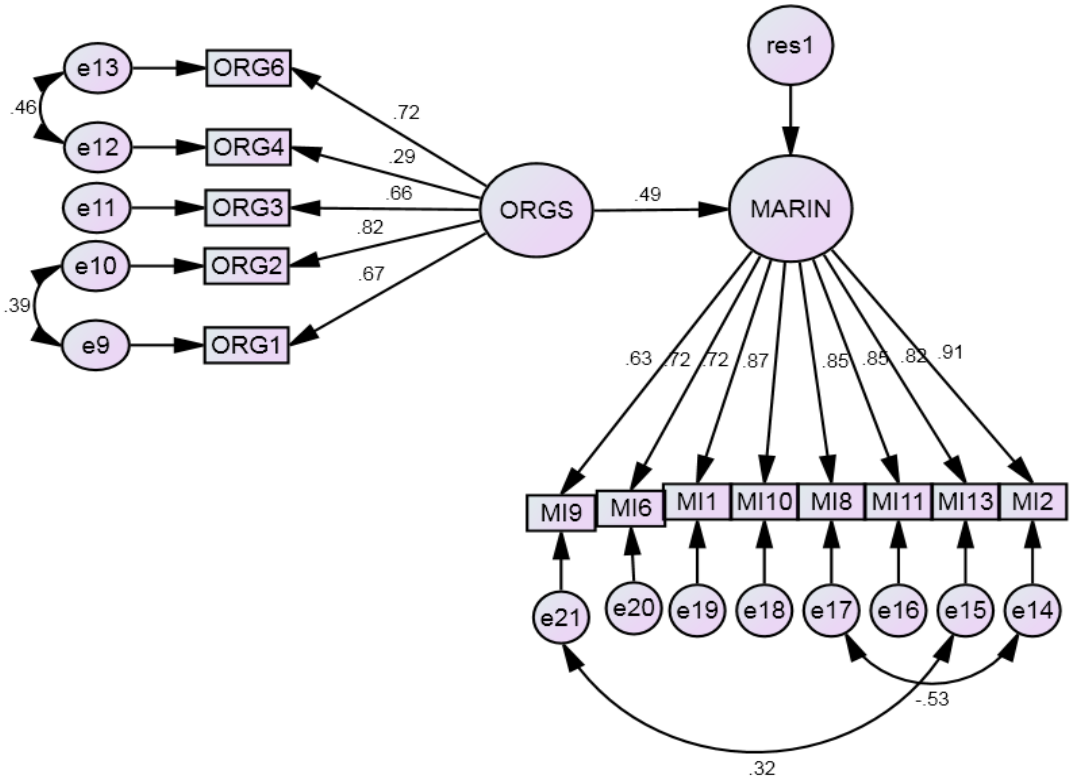
As required for the validity and acceptability of any model, the factor loadings shown in Table 7.3 for all the items are statistically significant (p-value < 0.05), and also in the predicted direction at the 0.001 level (two-tailed). For latent constructs ORGIN and ORGS in H1, the estimated direct effect of ORGS on ORGIN is 0.365. This

means that, when ORGS goes up by 1, ORGIN goes up by 0.365. Therefore, there is sufficient evidence to support that an Organic Structure promotes the development of an Organisational Innovation capability, thus proving H1. Moreover, a flexible organisational structure is shown to be a necessary antecedent for the implementation of a new organisational method in the business practices, workplace organisation or external relations.

### 7.2.2 Research Hypothesis 2

H2 proposed that an Organic Structure will promote the development of a Marketing Innovation capability. Figure 7.2 shows the structural relationship between ORGS and Marketing Innovation capability (MARIN), in H2.

**Figure 7.2: Structural Model Validating the Research Hypothesis 2**




The standardised regression weights are given in Figure 7.2 for all the observed items in ORGS and MARIN latent variables. The SRWE of .49 indicates a positive relationship between ORGS and MARIN. The summary of fit indices for the structural model validating H2 is given in Table 7.4.

**Table 7.4: Multiple Fit Indices for Structural Model validating H2**

| CMIN/DF | GFI | TLI | CFI | RMSEA | PCLOSE |
|---|---|---|---|---|---|
| 1.172 | 0.864 | 0.971 | 0.978 | 0.054 | 0.429 |

The figures in Table 7.4 satisfy the requirements for multiple fit indices, thus confirming that the model fits the data exceptionally well. Table 7.5 shows the regression weight estimate and the corresponding standard error and p-value for each of the items.

**Table 7.5: Regression Weights for Structural Model validating H2**

| | | | Estimate | S.E. | C.R. | P | Label |
|---|---|---|---|---|---|---|---|
| MARIN | <--- | ORGS | .369 | .105 | 3.504 | *** | par_17 |
| ORG1 | <--- | ORGS | .489 | .100 | 4.915 | *** | par_1 |
| ORG2 | <--- | ORGS | .579 | .089 | 6.511 | *** | par_2 |
| ORG3 | <--- | ORGS | .470 | .092 | 5.111 | *** | par_3 |
| ORG4 | <--- | ORGS | .224 | .111 | 2.027 | .043 | par_4 |
| ORG6 | <--- | ORGS | .595 | .105 | 5.642 | *** | par_5 |
| MI2 | <--- | MARIN | 1.000 | | | | |
| MI13 | <--- | MARIN | .834 | .094 | 8.899 | *** | par_8 |
| MI11 | <--- | MARIN | .840 | .089 | 9.485 | *** | par_9 |
| MI8 | <--- | MARIN | 1.065 | .138 | 7.722 | *** | par_10 |
| MI10 | <--- | MARIN | .830 | .083 | 9.946 | *** | par_11 |
| MI1 | <--- | MARIN | .761 | .108 | 7.037 | *** | par_12 |
| MI6 | <--- | MARIN | .736 | .107 | 6.913 | *** | par_13 |
| MI9 | <--- | MARIN | .548 | .097 | 5.664 | *** | par_14 |

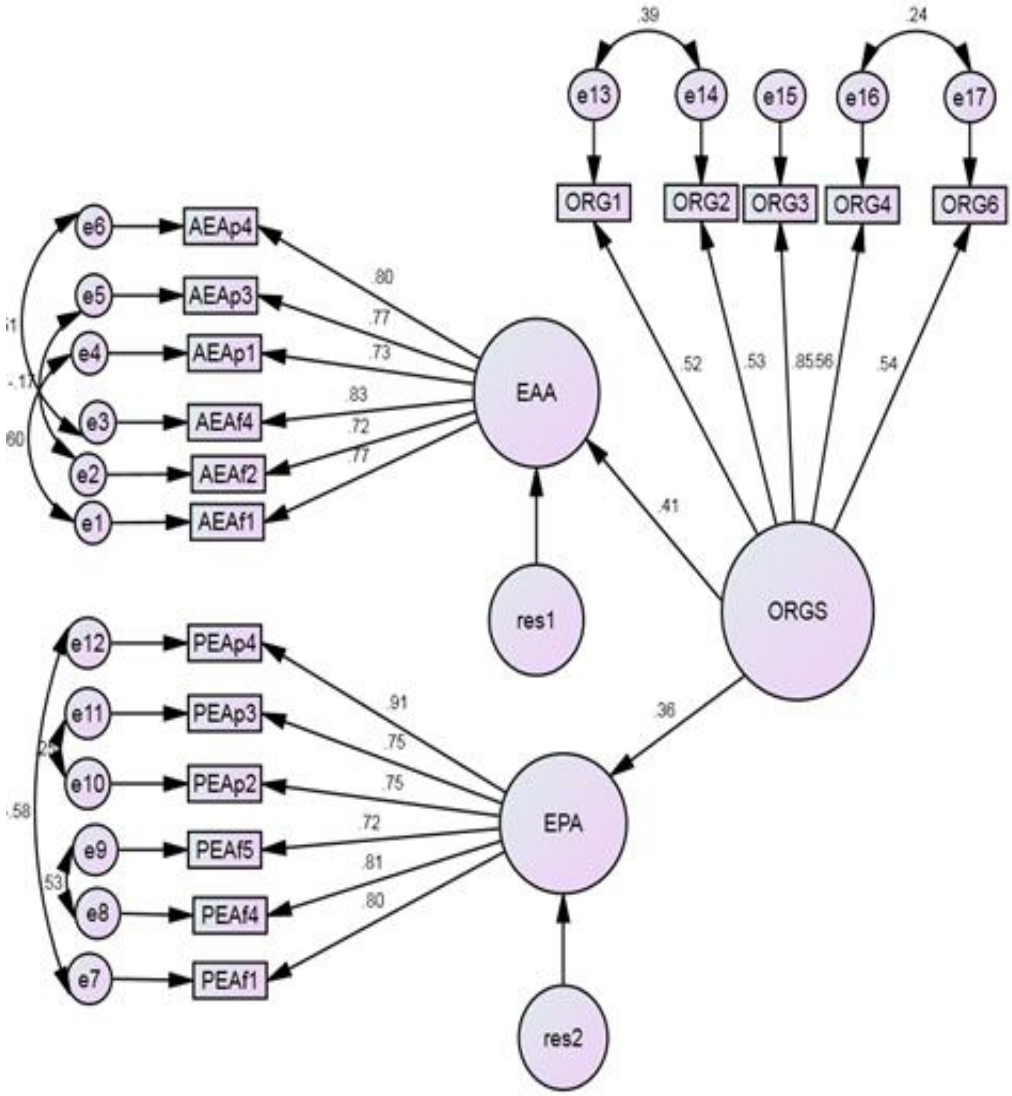
The factor loadings for all the items are statistically significant and also in the predicted direction. The estimated direct effect of ORGS on MARIN shows that when ORGS goes up by 1, MARIN goes up by 0.369. Therefore, there is sufficient evidence to support that an Organic Structure promotes the development of a Marketing Innovation capability. This confirms that a flexible organisational structure is a required antecedent to the implementation of a new marketing method involving significant changes in product packaging, product placement, product promotion or pricing, thus proving H2.

### 7.2.3 Research Hypothesis 3

H3 proposed that an Organic Structure will positively relate to Contextual Individual Ambidexterity of the shop-floor employees. Figure 7.3 shows the structural relationship between ORGS; Employee Active Ambidexterity (EAA); and Employee

Passive Ambidexterity (EPA), and the standardised regression weights for all the observed items in the model.

**Figure 7.3: Structural Model Validating the Research Hypothesis 3**




The SRWE estimates of 0.41 and 0.36 indicate a positive relationship between ORGS and EAA and between ORGS and EPA, respectively. The summary of fit indices for the structural model validating H3 is given in Table 7.6.

**Table 7.6: Multiple Fit Indices for Structural Model validating H3**

| CMIN/DF | GFI | TLI | CFI | RMSEA | PCLOSE |
|---|---|---|---|---|---|
| 2.468 | 0.929 | 0.950 | 0.960 | 0.061 | 0.026 |

Table 7.6 shows that results satisfy the requirements for multiple fit indices. Thus, this shows that the model fits the data exceptionally well. Table 7.7 shows the regression

weight estimate and the corresponding standard error and p-value for each of the items.

**Table 7.7: Regression Weights for Structural Model validating H3**

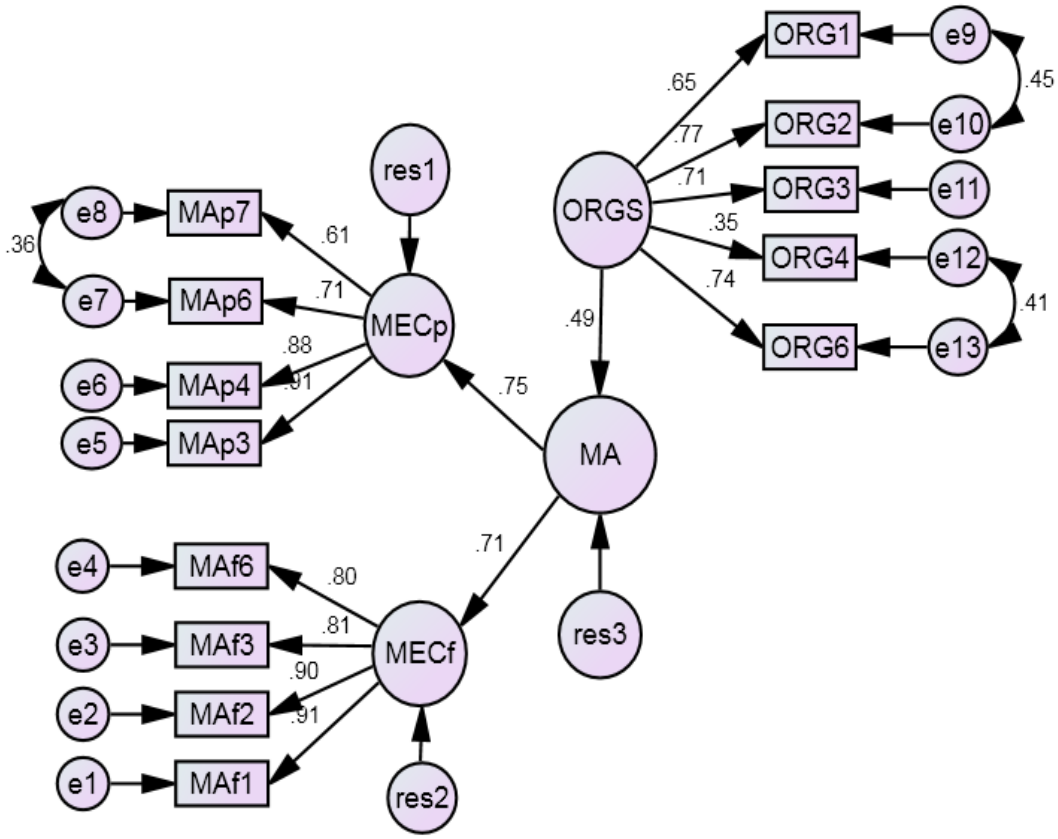
| | | | Estimate | S.E. | C.R. | P | Label |
|---|---|---|---|---|---|---|---|
| EAA | <--- | ORGS | .397 | .059 | 6.771 | *** | par_24 |
| EPA | <--- | ORGS | .281 | .045 | 6.255 | *** | par_25 |
| AEAf1 | <--- | EAA | 1.000 | | | | |
| AEAf2 | <--- | EAA | .926 | .068 | 13.616 | *** | par_1 |
| AEAf4 | <--- | EAA | 1.090 | .067 | 16.318 | *** | par_2 |
| AEAp1 | <--- | EAA | .990 | .043 | 23.219 | *** | par_3 |
| AEAp3 | <--- | EAA | 1.055 | .072 | 14.753 | *** | par_4 |
| AEAp4 | <--- | EAA | 1.073 | .069 | 15.601 | *** | par_5 |
| PEAf1 | <--- | EPA | 1.000 | | | | |
| PEAf4 | <--- | EPA | 1.084 | .065 | 16.581 | *** | par_9 |
| PEAf5 | <--- | EPA | 1.050 | .072 | 14.517 | *** | par_10 |
| PEAp2 | <--- | EPA | .875 | .057 | 15.222 | *** | par_11 |
| PEAp3 | <--- | EPA | .888 | .059 | 15.124 | *** | par_12 |
| PEAp4 | <--- | EPA | 1.065 | .064 | 16.512 | *** | par_13 |
| ORG1 | <--- | ORGS | .594 | .061 | 9.673 | *** | par_17 |
| ORG2 | <--- | ORGS | .546 | .055 | 9.948 | *** | par_18 |
| ORG3 | <--- | ORGS | .943 | .058 | 16.377 | *** | par_19 |
| ORG4 | <--- | ORGS | .658 | .063 | 10.423 | *** | par_20 |
| ORG6 | <--- | ORGS | .678 | .067 | 10.180 | *** | par_21 |

The factor loadings for all the items are statistically significant, and also in the predicted direction. The estimated direct effect of ORGS on EAA shows that when ORGS goes up by 1, EAA goes up by 0.397. Also, the estimated direct effect of ORGS on EPA indicates that when ORGS goes up by 1, EPA goes up by 0.281. Therefore, there is sufficient evidence to support that an Organic Structure positively relates to active and passive Contextual Individual Ambidexterity of the shop-floor employees, thus upholding H3. This indicates that a flexible organisational structure will encourage employees to passively and actively contribute to the *exploitation* of current market opportunities and *exploration* of future opportunities. As shown in Table 7.7 estimates, such an organisational structure has a more pronounced effect on active participation of the employees than it does on their passive participation.

### 7.2.4 Research Hypothesis 4

H4 proposed that an Organic Structure will positively relate to Contextual Individual Ambidexterity of the managerial staff. Figure 7.4 shows the structural relationship between ORGS and Contextual Individual Ambidexterity of the managerial staff (MA).

**Figure 7.4: Structural Model Validating the Research Hypothesis 4**




The standardised regression weights for all the observed items in the exogenous (independent) and endogenous (dependent) latent variables are shown in Figure 7.4. The SRWE of 0.49 between ORGS and MA indicates a positive relationship between the two latent variables. The summary of fit indices for the structural model validating H4 is presented in Table 7.8.

**Table 7.8: Multiple Fit Indices for Structural Model validating H4**

| CMIN/DF | GFI | TLI | CFI | RMSEA | PCLOSE |
|---|---|---|---|---|---|
| 1.305 | 0.841 | 0.946 | 0.958 | 0.072 | 0.216 |

Table 7.8 demonstrates that the model fits the data exceptionally well. Table 7.9 shows the regression weight estimate and the corresponding standard error and p-value for each of the items.

**Table 7.9: Regression Weights for Structural Model validating H4**

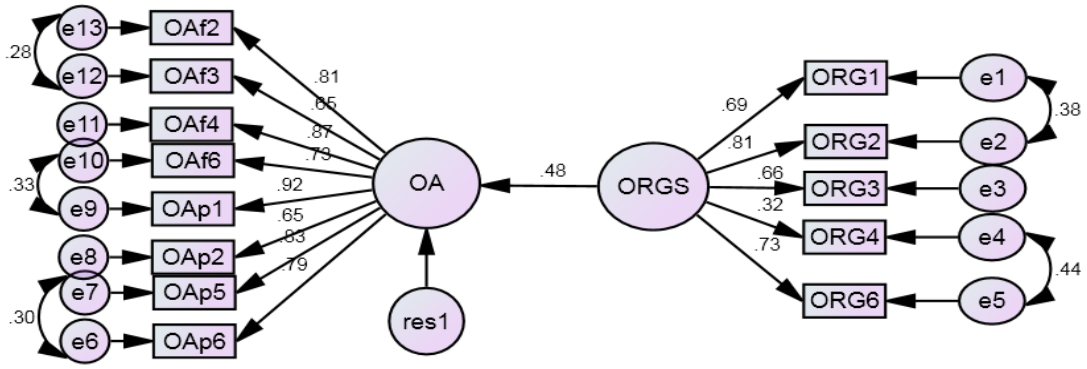
| | | | Estimate | S.E. | C.R. | P | Label |
|---|---|---|---|---|---|---|---|
| MA | <--- | ORGS | .236 | .084 | 2.808 | .005 | par_15 |
| MECp | <--- | MA | 1.000 | | | | |
| MECf | <--- | MA | 1.000 | | | | |
| MAf1 | <--- | MECf | 1.000 | | | | |
| MAf2 | <--- | MECf | .968 | .092 | 10.537 | *** | par_1 |
| MAf3 | <--- | MECf | .880 | .104 | 8.465 | *** | par_2 |
| MAf6 | <--- | MECf | .982 | .120 | 8.209 | *** | par_3 |
| MAp3 | <--- | MECp | 1.000 | | | | |
| MAp4 | <--- | MECp | .960 | .110 | 8.738 | *** | par_4 |
| MAp6 | <--- | MECp | .682 | .106 | 6.428 | *** | par_5 |
| MAp7 | <--- | MECp | .565 | .109 | 5.191 | *** | par_6 |
| ORG1 | <--- | ORGS | .475 | .099 | 4.791 | *** | par_8 |
| ORG2 | <--- | ORGS | .541 | .091 | 5.960 | *** | par_9 |
| ORG3 | <--- | ORGS | .505 | .092 | 5.505 | *** | par_10 |
| ORG4 | <--- | ORGS | .270 | .112 | 2.412 | .016 | par_11 |
| ORG6 | <--- | ORGS | .608 | .106 | 5.737 | *** | par_12 |

The factor loadings for all the items are statistically significant, and also in the predicted direction. The estimated direct effect of ORGS on MA indicates that when ORGS goes up by 1, MA goes up by 0.236. Therefore, there is sufficient evidence to support that an Organic Structure positively relates to Contextual Individual Ambidexterity of the managerial staff, thus proving H4. The implication is that a flexible organisational structure promotes employee's ability to concurrently explore current and future competitive advantage at managerial and shop-floor levels.

### 7.2.5 Research Hypothesis 5

H5 proposed that an Organic Structure will positively relate to the Organisational Ambidexterity. Figure 7.5 shows the structural relationship between the two measurement models, ORGS and Organisational Ambidexterity (OA).

**Figure 7.5: Structural Model Validating the Research Hypothesis 5**



The standardised regression weights are shown in Figure 7.5 for all the observed items in the exogenous (independent) and endogenous (dependent) latent variables. The SRWE of 0.48 indicates a positive relationship between the two latent variables. The summary of fit indices for the structural model validating H5 is given in Table 7.10.

**Table 7.10: Multiple Fit Indices for Structural Model validating H5**

| CMIN/DF | GFI | TLI | CFI | RMSEA | PCLOSE |
|---|---|---|---|---|---|
| 1.188 | 0.865 | 0.968 | 0.976 | 0.056 | 0.400 |

Table 7.10 shows that the model satisfies the condition for multiple fit indices and indicates that the model fits the data exceptionally well. Table 7.11 shows the regression weight estimate and the corresponding standard error and p-value for each of the items.

**Table 7.11: Regression Weights for Structural Model validating H5**

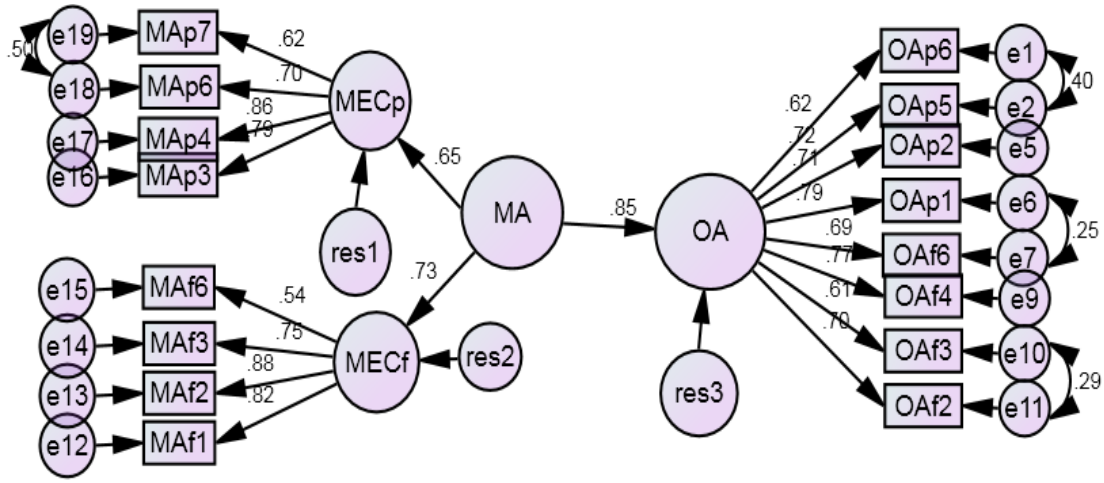
| | | | Estimate | S.E. | C.R. | P | Label |
|---|---|---|---|---|---|---|---|
| OA | <--- | ORGS | .294 | .091 | 3.238 | .001 | par_18 |
| ORG1 | <--- | ORGS | .499 | .099 | 5.051 | *** | par_1 |
| ORG2 | <--- | ORGS | .569 | .090 | 6.357 | *** | par_2 |
| ORG3 | <--- | ORGS | .472 | .092 | 5.131 | *** | par_3 |
| ORG4 | <--- | ORGS | .242 | .111 | 2.182 | .029 | par_4 |
| ORG6 | <--- | ORGS | .604 | .105 | 5.733 | *** | par_5 |
| OAp6 | <--- | OA | 1.000 | | | | |
| OAp5 | <--- | OA | 1.122 | .133 | 8.420 | *** | par_8 |
| OAp2 | <--- | OA | .834 | .159 | 5.251 | *** | par_9 |
| OAp1 | <--- | OA | 1.061 | .132 | 8.022 | *** | par_10 |
| OAf6 | <--- | OA | 1.008 | .170 | 5.919 | *** | par_11 |
| OAf4 | <--- | OA | 1.090 | .145 | 7.494 | *** | par_12 |
| OAf3 | <--- | OA | .857 | .165 | 5.191 | *** | par_13 |
| OAf2 | <--- | OA | 1.112 | .163 | 6.840 | *** | par_14 |

All the factor loadings are statistically significant in the predicted direction for all the items. The estimated direct effect of ORGS on OA indicates that when ORGS goes up by 1, OA goes up by 0.294. Therefore, there is sufficient evidence to support that an Organic Structure positively relates to the Organisational Ambidexterity, thus confirming H5. A flexible organisational structure is a perquisite for concurrently exploiting the present competitive advantage and exploring for the future competitive advantage. This is consistent with relationship of organic structure with individual ambidexterity.

### 7.2.6 Research Hypothesis 6

H6 proposed that Contextual Individual Ambidexterity of the managerial staff (MA) will positively relate to Organisational Ambidexterity (OA). Figure 7.6 shows the structural relationship between MA and OA.

**Figure 7.6: Structural Model Validating the Research Hypothesis 6**




The standardised regression weights are shown in Figure 7.6 for all the observed items in the exogenous (independent) and endogenous (dependent) latent variables. The SRWE of 0.85 indicates a very strong positive relationship between the two latent variables, MA and OA. The summary of fit indices for the structural model validating H6 is given in Table 7.12.

**Table 7.12: Multiple Fit Indices for Structural Model validating H6**

| CMIN/DF | GFI | TLI | CFI | RMSEA | PCLOSE |
|---|---|---|---|---|---|
| 1.923 | .900 | .933 | .946 | .068 | .025 |

The figures in Table 7.12 satisfy the requirements for multiple fit indices. Thus, this shows that the model fits the data exceptionally well. Table 7.13 shows the regression weight estimate and the corresponding standard error and p-value for each of the items. The factor loadings for all the items are statistically significant in the predicted direction. The estimated direct effect of MA on OA is .626 and this suggests that when MA goes up by 1, OA goes up by 0.626. Therefore, there is sufficient statistical evidence to support that MA positively relates to OA, thus proving H6.

**Table 7.13: Regression Weights for Structural Model validating H6**

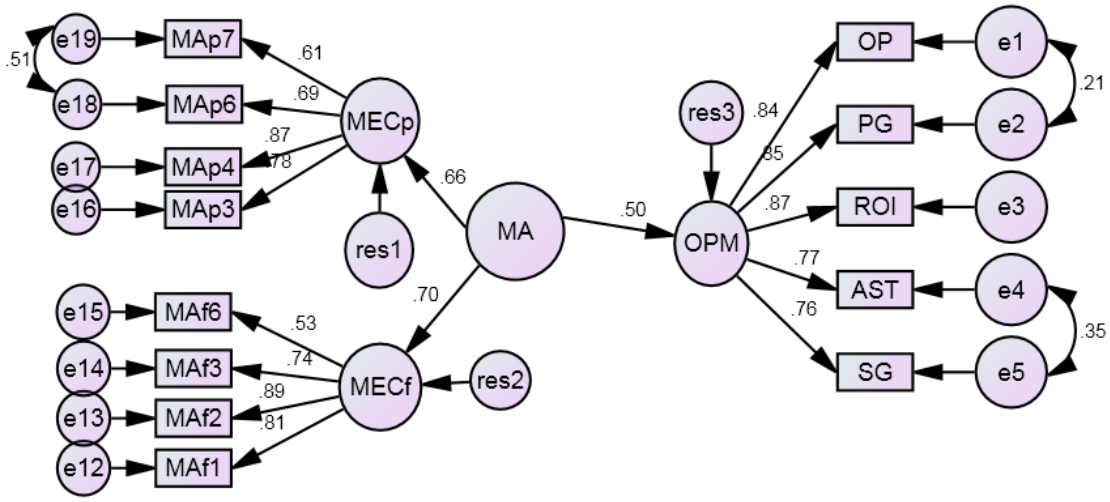
| | | | Estimate | S.E. | C.R. | P | Label |
|---|---|---|---|---|---|---|---|
| MECp | <--- | MA | .477 | .067 | 7.169 | *** | par_7 |
| MECf | <--- | MA | .605 | .075 | 8.094 | *** | par_8 |
| **OA** | **<---** | **MA** | **.626** | **.078** | **8.040** | ******* | **par_20** |
| MAf1 | <--- | MECf | 1.000 | | | | |
| MAf2 | <--- | MECf | 1.026 | .077 | 13.255 | *** | par_1 |
| MAf3 | <--- | MECf | .830 | .073 | 11.304 | *** | par_2 |
| MAf6 | <--- | MECf | .609 | .080 | 7.660 | *** | par_3 |
| MAp3 | <--- | MECp | 1.000 | | | | |
| MAp4 | <--- | MECp | 1.103 | .099 | 11.127 | *** | par_4 |
| MAp6 | <--- | MECp | .832 | .087 | 9.590 | *** | par_5 |
| MAp7 | <--- | MECp | .797 | .095 | 8.355 | *** | par_6 |
| OAp6 | <--- | OA | .817 | .103 | 7.965 | *** | par_10 |
| OAp5 | <--- | OA | 1.013 | .110 | 9.186 | *** | par_11 |
| OAp2 | <--- | OA | .901 | .099 | 9.071 | *** | par_12 |
| OAp1 | <--- | OA | .988 | .099 | 9.955 | *** | par_13 |
| OAf6 | <--- | OA | .979 | .111 | 8.803 | *** | par_14 |
| OAf4 | <--- | OA | 1.102 | .113 | 9.761 | *** | par_15 |
| OAf3 | <--- | OA | .873 | .092 | 9.456 | *** | par_16 |
| OAf2 | <--- | OA | 1.000 | | | | |

This finding confirms that ambidextrous individuals employed by an organisation will have an aggregate effect on the organisational ambidexterity. This corroborates the position of Raisch et al. (2009) on the relationship between individual and organisational ambidexterity.

### 7.2.7 Research Hypothesis 7

H7 proposed that MA will positively relate to Organisational performance (OPM). Figure 7.7 shows the structural relationship between MA and OPM.

**Figure 7.7: Structural Model Validating the Research Hypothesis 7**



The standardised regression weights are shown in Figure 7.7 for all the observed items in the exogenous and endogenous latent variables. The SRWE of .50 indicates a positive relationship between MA and OPM. The summary of fit indices for the structural model validating H7 is presented in Table 7.14.

**Table 7.14: Multiple Fit Indices for Structural Model validating H7**

| CMIN/DF | GFI | TLI | CFI | RMSEA | PCLOSE |
|---|---|---|---|---|---|
| 1.445 | 0.940 | 0.977 | 0.982 | 0.047 | 0.568 |

Table 7.14 shows that the model satisfies the requirement for multiple fit indices and that it fits the data exceptionally well. Table 7.15 shows the regression weight estimate and the corresponding standard error and p-value for each of the items.

**Table 7.15: Regression Weights for Structural Model validating H7**

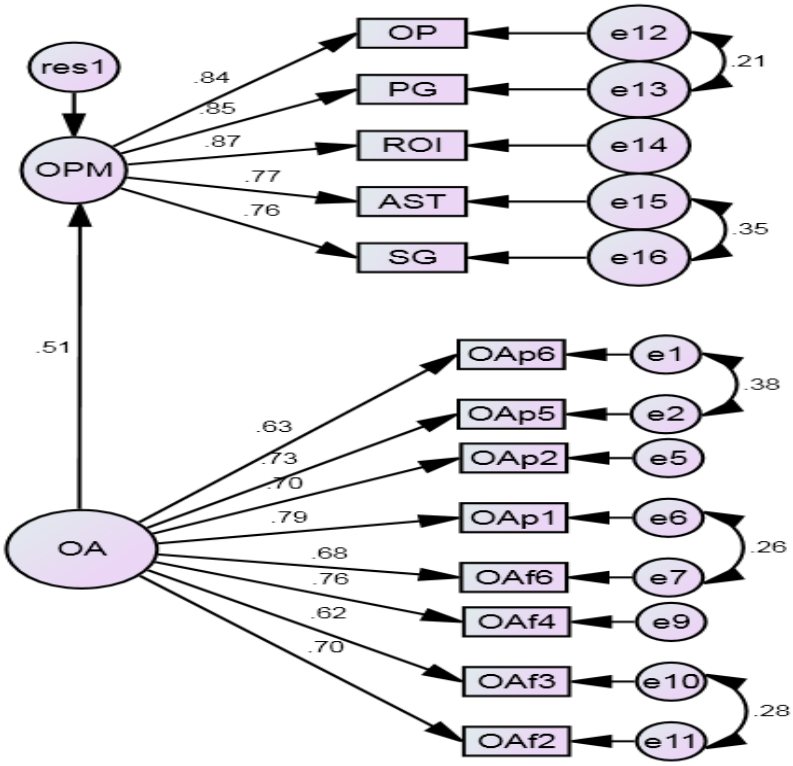
| | | | Estimate | S.E. | C.R. | P | Label |
|---|---|---|---|---|---|---|---|
| MECp | <--- | MA | .478 | .083 | 5.739 | *** | par_7 |
| MECf | <--- | MA | .578 | .095 | 6.058 | *** | par_8 |
| OPM | <--- | MA | .352 | .069 | 5.080 | *** | par_16 |
| MAf1 | <--- | MECf | 1.000 | | | | |
| MAf2 | <--- | MECf | 1.047 | .080 | 13.113 | *** | par_1 |
| MAf3 | <--- | MECf | .828 | .074 | 11.168 | *** | par_2 |
| MAf6 | <--- | MECf | .596 | .080 | 7.427 | *** | par_3 |
| MAp3 | <--- | MECp | 1.000 | | | | |
| MAp4 | <--- | MECp | 1.140 | .105 | 10.870 | *** | par_4 |
| MAp6 | <--- | MECp | .836 | .088 | 9.456 | *** | par_5 |
| MAp7 | <--- | MECp | .798 | .097 | 8.222 | *** | par_6 |
| OP | <--- | OPM | 1.191 | .101 | 11.846 | *** | par_10 |
| PG | <--- | OPM | 1.172 | .097 | 12.109 | *** | par_11 |
| ROI | <--- | OPM | 1.182 | .093 | 12.654 | *** | par_12 |
| AST | <--- | OPM | 1.030 | .074 | 13.986 | *** | par_13 |
| SG | <--- | OPM | 1.000 | | | | |

The factor loadings for all the items are statistically significant in the predicted direction. The estimated direct effect of MA on OPM shows that when MA goes up by 1, OPM goes up by 0.352. Therefore, there is sufficient evidence to support that MA positively relates to OPM, thus proving H7. This suggests that organisational performance improves when managerial employees are able to simultaneously exploit current market opportunities and create future market opportunities for the organisation.

### 7.2.8 Research Hypothesis 8

H8 proposed that OA will positively relate to OPM. Figure 7.8 shows the structural relationship between OA and OPM.

**Figure 7.8: Structural Model Validating the Research Hypothesis 8**




The standardised regression weights are shown in Figure 7.8 for all the observed items in the exogenous and endogenous latent variables. The SRWE of 0.51 indicates a positive relationship between the two latent variables, OA and OPM. The summary of fit indices for the structural model validating H8 is given in Table 7.16.

**Table 7.16: Multiple Fit Indices for Structural Model validating H8**

| CMIN/DF | GFI | TLI | CFI | RMSEA | PCLOSE |
|---|---|---|---|---|---|
| 2.604 | 0.895 | 0.922 | 0.941 | 0.089 | 0.000 |

Although the selected absolute fit index (GFI) given in Table 7.16 falls slightly below 0.900, the model fits the data to an acceptable standard. Table 7.17 shows the regression weight estimate and the corresponding standard error and p-value for each of the items.

**Table 7.17: Regression Weights for Structural Model validating H8**

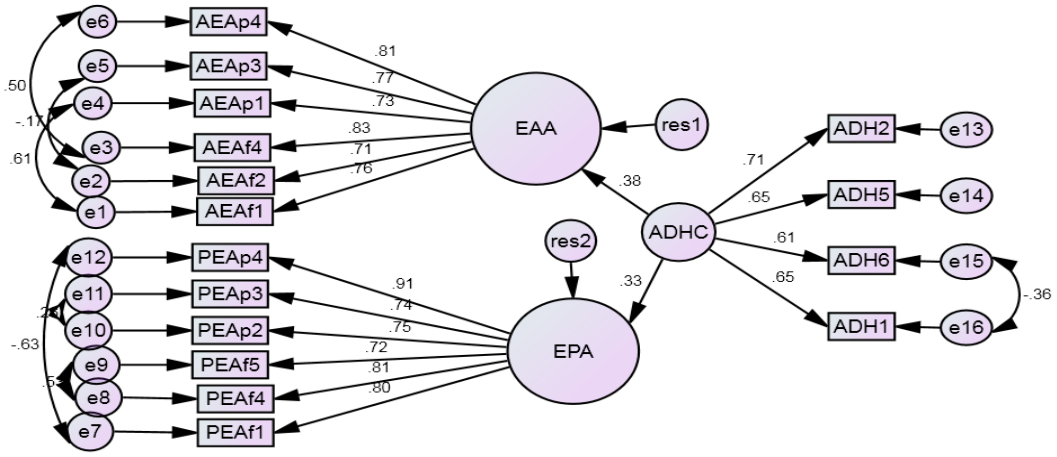
| | | | Estimate | S.E. | C.R. | P | Label |
|---|---|---|---|---|---|---|---|
| OPM | <--- | OA | .359 | .057 | 6.327 | *** | par_18 |
| OP | <--- | OPM | 1.181 | .099 | 11.950 | *** | par_1 |
| PG | <--- | OPM | 1.165 | .095 | 12.268 | *** | par_2 |
| ROI | <--- | OPM | 1.172 | .092 | 12.774 | *** | par_3 |
| AST | <--- | OPM | 1.024 | .073 | 14.045 | *** | par_4 |
| SG | <--- | OPM | 1.000 | | | | |
| OAp6 | <--- | OA | .614 | .065 | 9.378 | *** | par_7 |
| OAp5 | <--- | OA | .755 | .066 | 11.353 | *** | par_8 |
| OAp2 | <--- | OA | .652 | .061 | 10.722 | *** | par_9 |
| OAp1 | <--- | OA | .727 | .057 | 12.717 | *** | par_10 |
| OAf6 | <--- | OA | .711 | .069 | 10.333 | *** | par_11 |
| OAf4 | <--- | OA | .801 | .066 | 12.052 | *** | par_12 |
| OAf3 | <--- | OA | .651 | .071 | 9.231 | *** | par_13 |
| OAf2 | <--- | OA | .737 | .069 | 10.722 | *** | par_14 |

The factor loadings for all the items are statistically significant in the predicted direction. The estimated direct effect of OA on OPM indicates that when OA goes up by 1, OPM goes up by 0.359. Therefore, there is sufficient evidence to support that OA positively relates to OPM, thus proving H8. The implication of this statistical evidence shows organisations must simultaneously exploit existing competitive advantage and explore new ones with equal dexterity to improve their sustainable performance and growth.

### 7.2.9 Research Hypothesis 9a

H9a proposed that an adhocracy culture (ADHC) will promote the development of Contextual Individual Ambidexterity of the shop-floor employees. Figure 7.9 shows the structural relationship between ADHC, Employee Active Ambidexterity (EAA) and Employee Passive Ambidexterity (EPA).

**Figure 7.9: Structural Model Validating the Research Hypothesis 9a**



The standardised regression weights are shown in Figure 7.9 for all the observed items in the independent and dependent latent variables. The SRWEs of 0.38 and 0.33 indicate the strengths of the positive relationships between ADHC and EAA and between ADHC and EPA respectively. The summary of fit indices for the structural model validating H9a is presented in Table 7.18.

**Table 7.18: Multiple Fit Indices for Structural Model validating H9a**

| CMIN/DF | GFI | TLI | CFI | RMSEA | PCLOSE |
|---|---|---|---|---|---|
| 2.690 | 0.928 | 0.946 | 0.958 | 0.065 | 0.005 |

Table 7.18 shows that the model fits the data exceptionally well. Table 7.19 shows the regression weight estimate and the corresponding standard error and p-value for each of the items.

**Table 7.19: Regression Weights for Structural Model validating H9a**

| | | | Estimate | S.E. | C.R. | P | Label |
|---|---|---|---|---|---|---|---|
| EAA | <--- | ADHC | .362 | .058 | 6.250 | *** | par_21 |
| EPA | <--- | ADHC | .255 | .045 | 5.724 | *** | par_22 |
| AEAf1 | <--- | EAA | 1.000 | | | | |
| AEAf2 | <--- | EAA | .924 | .069 | 13.414 | *** | par_1 |
| AEAf4 | <--- | EAA | 1.099 | .068 | 16.180 | *** | par_2 |
| AEAp1 | <--- | EAA | .989 | .043 | 23.080 | *** | par_3 |
| AEAp3 | <--- | EAA | 1.070 | .072 | 14.776 | *** | par_4 |
| AEAp4 | <--- | EAA | 1.091 | .070 | 15.619 | *** | par_5 |
| PEAf1 | <--- | EPA | 1.000 | | | | |
| PEAf4 | <--- | EPA | 1.078 | .066 | 16.387 | *** | par_9 |
| PEAf5 | <--- | EPA | 1.044 | .073 | 14.377 | *** | par_10 |
| PEAp2 | <--- | EPA | .870 | .058 | 15.058 | *** | par_11 |
| PEAp3 | <--- | EPA | .885 | .059 | 15.004 | *** | par_12 |
| PEAp4 | <--- | EPA | 1.074 | .065 | 16.505 | *** | par_13 |
| ADH2 | <--- | ADHC | .708 | .050 | 14.235 | *** | par_17 |
| ADH5 | <--- | ADHC | .620 | .048 | 12.928 | *** | par_18 |
| ADH6 | <--- | ADHC | .610 | .055 | 11.016 | *** | par_19 |
| ADH1 | <--- | ADHC | .620 | .051 | 12.074 | *** | par_20 |

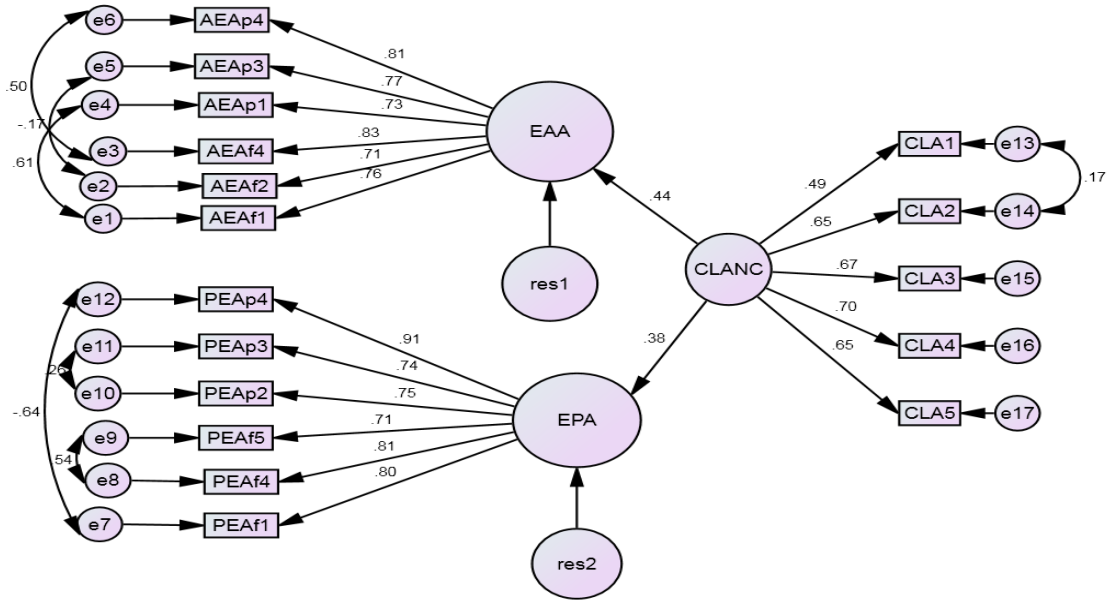
The factor loadings for all the items are statistically significant in the predicted direction. Significant estimated direct effects of ADHC on EAA and EPA show that an adhocracy culture positively relates to Employee Active and Passive Ambidexterity. When ADHC goes up by 1, EAA and EPA go up by .362 and .255 respectively. Therefore, there is sufficient statistical evidence that an adhocracy culture positively relates to active and passive Contextual Individual Ambidexterity of

the shop-floor employees, thus proving H9a. The implication of this finding is that an adhocracy culture encourages flexibility and creativity. Therefore, organisations with such culture promote the development of individual employee's exploitative and explorative potentials for the benefit of organisational growth. In an environment that supports creativity, employees are able to passively offer relevant suggestions towards organisational growth. Also, employees are empowered to actively search for and find better ways of carrying out their individual roles.

### 7.2.10 Research Hypothesis 9b

H9b proposed that a clan culture will promote the development of Contextual Individual Ambidexterity of the shop-floor employees. Figure 7.10 shows the structural relationship between Clan Culture (CLANC), EAA and EPA.

**Figure 7.10: Structural Model Validating the Research Hypothesis 9b**




The standardised regression weights are shown in Figure 7.10 for all the observed items in the independent and dependent latent variables. The SRWEs of 0.44 and 0.38 indicate the strengths of the positive relationships between CLANC and EAA and between CLANC and EPA respectively. The summary of fit indices for the structural model validating H9b is presented in Table 7.20.

**Table 7.20: Multiple Fit Indices for Structural Model validating H9b**

| CMIN/DF | GFI | TLI | CFI | RMSEA | PCLOSE |
|---|---|---|---|---|---|
| 2.662 | 0.920 | 0.943 | 0.954 | 0.065 | 0.004 |

The figures in Table 7.20 show that the model satisfies the requirement for multiple fit indices. Thus, this confirms that the model fits the data exceptionally well. Table 7.21 shows the regression weight estimate and the corresponding standard error and p-value for each of the items.

**Table 7.21: Regression Weights for Structural Model validating H9b**

| | | | Estimate | S.E. | C.R. | P | Label |
|---|---|---|---|---|---|---|---|
| EAA | <--- | CLANC | .429 | .058 | 7.353 | *** | par_22 |
| EPA | <--- | CLANC | .296 | .045 | 6.600 | *** | par_23 |
| AEAf1 | <--- | EAA | 1.000 | | | | |
| AEAf2 | <--- | EAA | .921 | .069 | 13.401 | *** | par_1 |
| AEAf4 | <--- | EAA | 1.102 | .068 | 16.238 | *** | par_2 |
| AEAp1 | <--- | EAA | .991 | .043 | 23.111 | *** | par_3 |
| AEAp3 | <--- | EAA | 1.070 | .072 | 14.807 | *** | par_4 |
| AEAp4 | <--- | EAA | 1.091 | .070 | 15.626 | *** | par_5 |
| PEAf1 | <--- | EPA | 1.000 | | | | |
| PEAf4 | <--- | EPA | 1.075 | .065 | 16.460 | *** | par_9 |
| PEAf5 | <--- | EPA | 1.041 | .072 | 14.421 | *** | par_10 |
| PEAp2 | <--- | EPA | .868 | .057 | 15.136 | *** | par_11 |
| PEAp3 | <--- | EPA | .883 | .059 | 15.067 | *** | par_12 |
| PEAp4 | <--- | EPA | 1.071 | .065 | 16.536 | *** | par_13 |
| CLA1 | <--- | CLANC | .626 | .068 | 9.154 | *** | par_17 |
| CLA2 | <--- | CLANC | .753 | .059 | 12.827 | *** | par_18 |
| CLA3 | <--- | CLANC | .629 | .047 | 13.518 | *** | par_19 |
| CLA4 | <--- | CLANC | .709 | .050 | 14.124 | *** | par_20 |
| CLA5 | <--- | CLANC | .703 | .054 | 12.977 | *** | par_21 |

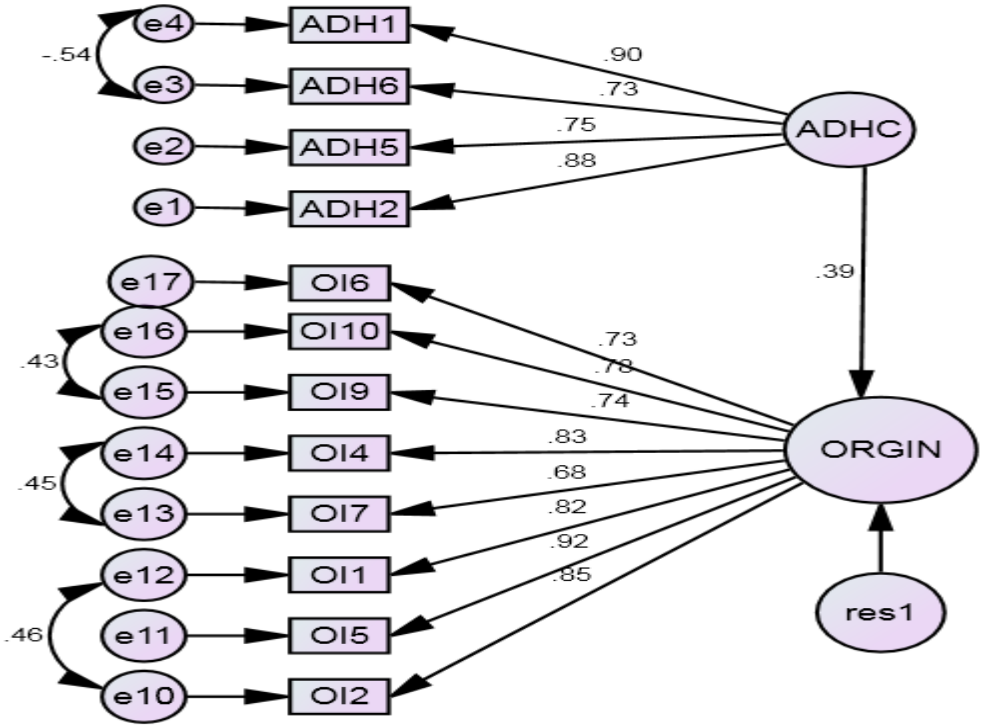
The factor loadings for all the items are statistically significant in the predicted direction. For the three latent constructs (CLANC, EAA and EPA), the estimated direct effects of CLANC on EAA and EPA are .429 and .296 respectively. This implies that when CLANC goes up by 1, EAA and EPA go up by .429 and .296 respectively. From these estimates, there is a more pronounced effect on active than passive ambidexterity.

Therefore, there is sufficient evidence to support that a clan culture positively relates to active and passive CIA of the shop-floor employees, thus confirming H9b. The implication of this statistical evidence is that a family-like organisational culture empowers shop-floor employees to develop their potentials to identify current and future growth opportunities for their organisation. Employees are able to actively and passively contribute to exploitation and exploration capabilities of their organisation.

### 7.2.11 Research Hypothesis 10a

H10a proposed that an adhocracy culture (ADHC) will promote the development of an Organisational Innovation capability (ORGIN). Figure 7.11 shows the structural relationship between ADHC and ORGIN.

**Figure 7.11: Structural Model Validating the Research Hypothesis 10a**




The standardised regression weights are shown in Figure 7.11 for all the observed items in the independent and dependent latent variables. The SRWE of 0.39 indicates the strength of a positive relationship between ADHC and ORGIN. The summary of fit indices for the structural model validating H10a is presented in Table 7.22.

**Table 7.22: Multiple Fit Indices for Structural Model validating H10a**

| CMIN/DF | GFI | TLI | CFI | RMSEA | PCLOSE |
|---|---|---|---|---|---|
| 1.504 | 0.852 | 0.937 | 0.954 | 0.092 | 0.069 |

The figures in Table 7.22 indicate that the model satisfies the requirement for multiple fit indices. This shows that the model fits the data well. Table 7.23 shows the regression weight estimate and the corresponding standard error and p-value for each of the items.

**Table 7.23: Regression Weights for Structural Model validating H10a**

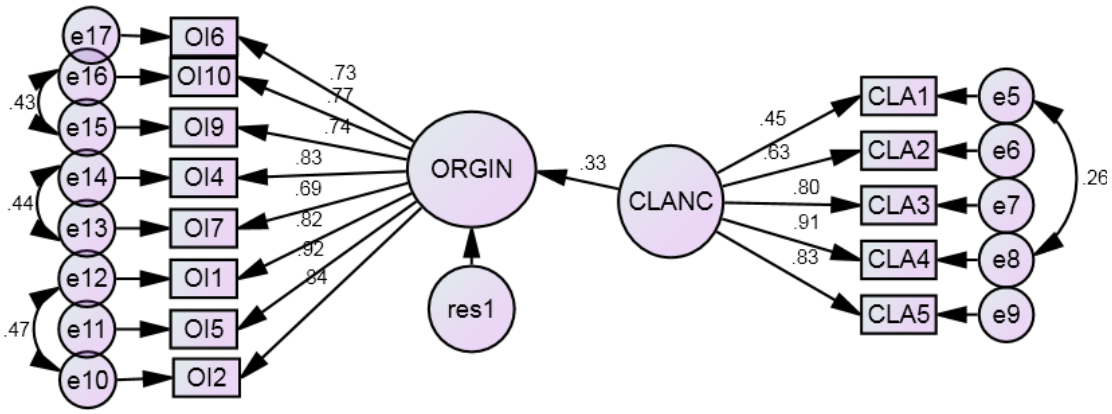
| | | | Estimate | S.E. | C.R. | P | Label |
|---|---|---|---|---|---|---|---|
| ORGIN | <--- | ADHC | .266 | .094 | 2.834 | .005 | par_16 |
| OI2 | <--- | ORGIN | 1.000 | | | | |
| OI5 | <--- | ORGIN | 1.036 | .110 | 9.410 | *** | par_1 |
| OI1 | <--- | ORGIN | .999 | .094 | 10.613 | *** | par_2 |
| OI7 | <--- | ORGIN | .805 | .136 | 5.935 | *** | par_3 |
| OI4 | <--- | ORGIN | .998 | .126 | 7.914 | *** | par_4 |
| OI9 | <--- | ORGIN | .852 | .128 | 6.633 | *** | par_5 |
| OI10 | <--- | ORGIN | .849 | .119 | 7.133 | *** | par_6 |
| OI6 | <--- | ORGIN | .801 | .122 | 6.576 | *** | par_7 |
| ADH2 | <--- | ADHC | .685 | .083 | 8.265 | *** | par_11 |
| ADH5 | <--- | ADHC | .493 | .075 | 6.600 | *** | par_12 |
| ADH6 | <--- | ADHC | .529 | .088 | 6.008 | *** | par_13 |
| ADH1 | <--- | ADHC | .607 | .072 | 8.380 | *** | par_14 |

All the factor loadings are statistically significant in the predicted direction. The estimated direct effect of ADHC on ORGIN shows that when ADHC goes up by 1, ORGIN goes up by 0.266. Therefore, there is sufficient evidence to support that an adhocracy culture positively relates to Organisational Innovation capability, thus proving H10a. The implication of this finding is that an organisational culture that supports flexibility and creativity is a necessary antecedent for the implementation of a new organisational method in the business practices, workplace organisation or external relations.

### 7.2.12 Research Hypothesis 10b

H10b proposed that a clan culture (CLANC) will promote the development of ORGIN. Figure 7.12 shows the structural relationship between CLANC and ORGIN.

**Figure 7.12: Structural Model Validating the Research Hypothesis 10b**



The standardised regression weights are shown in Figure 7.12 for all the observed items in the independent and dependent latent variables. The SRWE of .33 indicates a positive relationship between CLANC and ORGIN. The summary of fit indices for the structural model validating H10b is given in Table 7.24.

**Table 7.24: Multiple Fit Indices for Structural Model validating H10b**

| CMIN/DF | GFI | TLI | CFI | RMSEA | PCLOSE |
|---|---|---|---|---|---|
| 1.332 | 0.850 | 0.951 | 0.962 | 0.075 | 0.183 |

Table 7.24 confirms that the model satisfies the requirement for multiple fit indices and that it fits the data exceptionally well. Table 7.25 shows the regression weight estimate and the corresponding standard error and p-value for each of the items.

**Table 7.25: Regression Weights for Structural Model validating H10b**

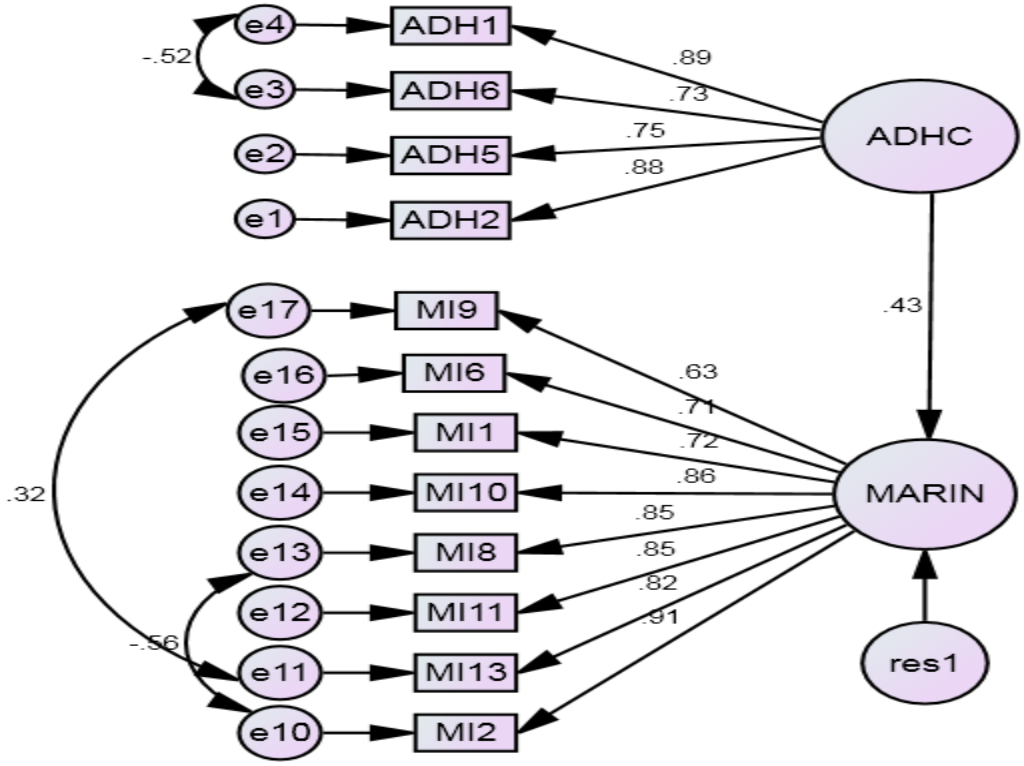
| | | | Estimate | S.E. | C.R. | P | Label |
|---|---|---|---|---|---|---|---|
| ORGIN | <--- | CLANC | .223 | .095 | 2.340 | .019 | par_16 |
| CLA1 | <--- | CLANC | .399 | .118 | 3.371 | *** | par_1 |
| CLA2 | <--- | CLANC | .413 | .081 | 5.122 | *** | par_2 |
| CLA3 | <--- | CLANC | .430 | .061 | 7.082 | *** | par_3 |
| CLA4 | <--- | CLANC | .676 | .079 | 8.590 | *** | par_4 |
| CLA5 | <--- | CLANC | .667 | .088 | 7.583 | *** | par_5 |
| OI2 | <--- | ORGIN | 1.000 | | | | |
| OI5 | <--- | ORGIN | 1.044 | .111 | 9.381 | *** | par_6 |
| OI1 | <--- | ORGIN | 1.000 | .094 | 10.582 | *** | par_7 |
| OI7 | <--- | ORGIN | .815 | .136 | 5.983 | *** | par_8 |
| OI4 | <--- | ORGIN | 1.002 | .127 | 7.861 | *** | par_9 |
| OI9 | <--- | ORGIN | .856 | .129 | 6.622 | *** | par_10 |
| OI10 | <--- | ORGIN | .851 | .120 | 7.074 | *** | par_11 |
| OI6 | <--- | ORGIN | .804 | .123 | 6.539 | *** | par_12 |

The factor loadings for all the items are statistically significant in the predicted direction. The estimated direct effect of CLANC on ORGIN indicates that when CLANC goes up by 1, ORGIN goes up by 0.223. Therefore, there is sufficient evidence to support that a clan culture promotes the development of an Organisational Innovation capability, thus proving H10b. This statistical evidence shows that a family-like culture that supports teamwork; employee involvement and empowerment; and corporate commitment to employee well-being, is a necessary antecedent for the implementation of a new organisational method in the business practices, workplace organisation or external relations.

### 7.2.13 Research Hypothesis 11a

H11a proposed that an adhocracy culture will promote the development of a Marketing Innovation capability. Figure 7.13 shows the structural relationship between ADHC and Marketing Innovation capability (MARIN).

**Figure 7.13: Structural Model Validating the Research Hypothesis 11a**




The standardised regression weights are shown in Figure 7.13 for all the observed items in the independent and dependent latent variables. The SRWE of 0.43 indicates a positive relationship between ADHC and MARIN. The summary of fit indices for the structural model validating H11a is given in Table 7.26.

**Table 7.26: Multiple Fit Indices for Structural Model validating H11a**

| CMIN/DF | GFI | TLI | CFI | RMSEA | PCLOSE |
|---|---|---|---|---|---|
| 1.038 | 0.875 | 0.995 | 0.996 | 0.025 | 0.667 |

Table 7.26 shows that the model satisfies the requirements for multiple fit indices and this confirms that the model fits the data well. Table 7.27 shows the regression weight estimate and the corresponding standard error and p-value for each of the items.

**Table 7.27: Regression Weights for Structural Model validating H11a**

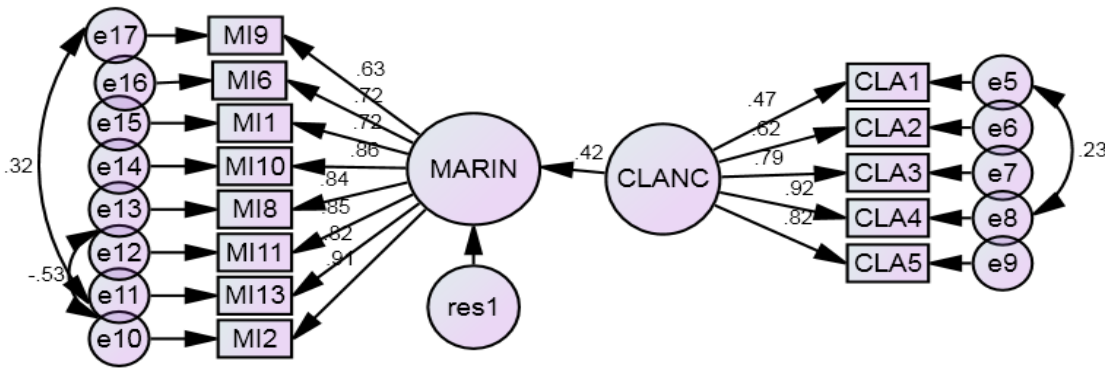
| | | | Estimate | S.E. | C.R. | P | Label |
|---|---|---|---|---|---|---|---|
| MARIN | <--- | ADHC | .319 | .099 | 3.206 | .001 | par_14 |
| ADH2 | <--- | ADHC | .687 | .083 | 8.316 | *** | par_1 |
| ADH5 | <--- | ADHC | .494 | .075 | 6.611 | *** | par_2 |
| ADH6 | <--- | ADHC | .533 | .088 | 6.085 | *** | par_3 |
| ADH1 | <--- | ADHC | .603 | .073 | 8.287 | *** | par_4 |
| MI2 | <--- | MARIN | 1.000 | | | | |
| MI13 | <--- | MARIN | .831 | .093 | 8.932 | *** | par_5 |
| MI11 | <--- | MARIN | .837 | .088 | 9.518 | *** | par_6 |
| MI8 | <--- | MARIN | 1.063 | .137 | 7.730 | *** | par_7 |
| MI10 | <--- | MARIN | .826 | .083 | 9.965 | *** | par_8 |
| MI1 | <--- | MARIN | .756 | .108 | 7.016 | *** | par_9 |
| MI6 | <--- | MARIN | .733 | .106 | 6.913 | *** | par_10 |
| MI9 | <--- | MARIN | .548 | .096 | 5.714 | *** | par_11 |

Also, the factor loadings for all the items are statistically significant in the predicted direction. The estimated direct effect of ADHC on MARIN shows that when ADHC goes up by 1, MARIN goes up by 0.319. Therefore, there is sufficient evidence to support that an adhocracy culture promotes the development of a Marketing Innovation capability, thus proving H11a. This confirms that an organisational culture that supports flexibility and creativity is a necessary antecedent for the implementation of a new marketing method that involves significant changes in product packaging, product placement, product promotion or pricing.

### 7.2.14 Research Hypothesis 11b

H11b proposed that a clan culture will promote the development of Marketing Innovation capability. Figure 7.14 shows the structural relationship between CLANC and MARIN.

**Figure 7.14: Structural Model Validating the Research Hypothesis 11b**




The standardised regression weights are shown in Figure 7.14 for all the observed items in the independent and dependent latent variables. The SRWE of 0.42 indicates

a positive relationship between CLANC and MARIN. The summary of fit indices for the structural model validating H11b is given in Table 7.28.

**Table 7.28: Multiple Fit Indices for Structural Model validating H11b**

| CMIN/DF | GFI | TLI | CFI | RMSEA | PCLOSE |
|---|---|---|---|---|---|
| 1.086 | 0.860 | 0.986 | 0.989 | 0.038 | 0.596 |

Table 7.28 confirms that the model satisfies the requirement for multiple fit indices. This confirms that the model fits the data exceptionally well. Table 7.29 shows the regression weight estimate and the corresponding standard error and p-value for each of the items.

**Table 7.29: Regression Weights for Structural Model validating H11b**

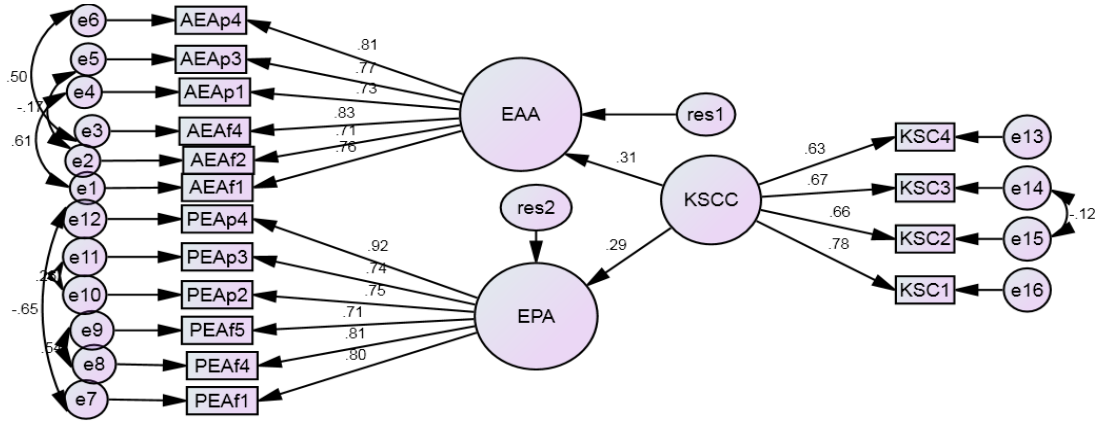
| | | | Estimate | S.E. | C.R. | P | Label |
|---|---|---|---|---|---|---|---|
| MARIN | <--- | CLANC | .314 | .101 | 3.108 | .002 | par_15 |
| CLA1 | <--- | CLANC | .409 | .118 | 3.458 | *** | par_1 |
| CLA2 | <--- | CLANC | .409 | .081 | 5.072 | *** | par_2 |
| CLA3 | <--- | CLANC | .427 | .061 | 7.035 | *** | par_3 |
| CLA4 | <--- | CLANC | .686 | .078 | 8.802 | *** | par_4 |
| CLA5 | <--- | CLANC | .659 | .088 | 7.473 | *** | par_5 |
| MI2 | <--- | MARIN | 1.000 | | | | |
| MI13 | <--- | MARIN | .833 | .093 | 8.928 | *** | par_6 |
| MI11 | <--- | MARIN | .840 | .088 | 9.543 | *** | par_7 |
| MI8 | <--- | MARIN | 1.060 | .137 | 7.712 | *** | par_8 |
| MI10 | <--- | MARIN | .828 | .083 | 9.953 | *** | par_9 |
| MI1 | <--- | MARIN | .759 | .108 | 7.033 | *** | par_10 |
| MI6 | <--- | MARIN | .736 | .106 | 6.928 | *** | par_11 |
| MI9 | <--- | MARIN | .547 | .096 | 5.672 | *** | par_12 |

The factor loadings for all the items are statistically significant in the predicted direction. The estimated direct effect of CLANC on MARIN indicates that when CLANC goes up by 1, MARIN goes up by 0.314. Therefore, there is sufficient evidence to support that a clan culture promotes the development of a Marketing Innovation capability, thus proving H11b. This shows that a family-like culture which supports employee involvement and empowerment is a prerequisite for the implementation of a new marketing method that involves significant changes in product packaging, product placement, product promotion or pricing.

### 7.2.15 Research Hypothesis 12

H12 proposed that a Knowledge Sharing Culture will positively relate to Contextual Individual Ambidexterity of the shop-floor employees. Figure 7.15 shows the structural relationship between Knowledge Sharing Culture (KSCC), EAA and EPA.

**Figure 7.15: Structural Model Validating the Research Hypothesis 12**




The standardised regression weights are shown in Figure 7.15 for all the observed items in the independent and dependent latent variables. The SRWEs of 0.31 and 0.29 indicate a positive relationship between KSCC and EAA and between KSCC and EPA respectively. The summary of fit indices for the structural model validating H12 is given in Table 7.30.

**Table 7.30: Multiple Fit Indices for Structural Model validating H12**

| CMIN/DF | GFI | TLI | CFI | RMSEA | PCLOSE |
|---|---|---|---|---|---|
| 3.214 | 0.914 | 0.931 | 0.946 | 0.075 | 0.000 |

Table 7.30 confirms that the model fits the data exceptionally well. Table 7.31 shows the regression weight estimate and the corresponding standard error and p-value for each of the items.

**Table 7.31: Regression Weights for Structural Model validating H12**

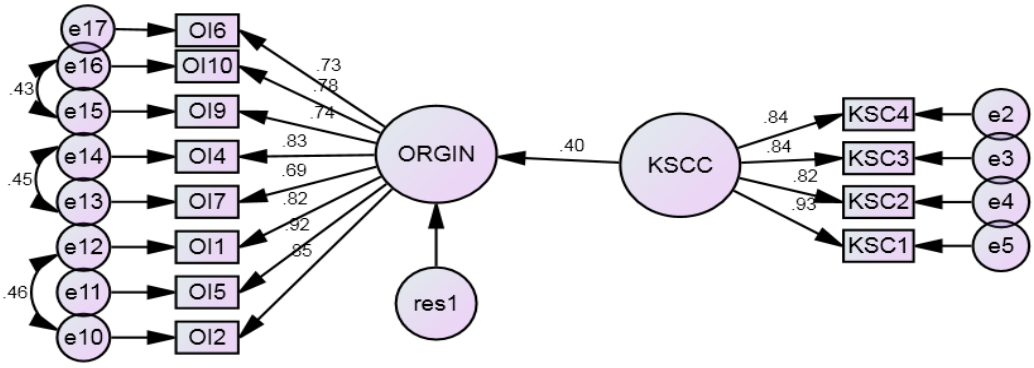
| | | | Estimate | S.E. | C.R. | P | Label |
|---|---|---|---|---|---|---|---|
| EAA | <--- | KSCC | .297 | .058 | 5.142 | *** | par_22 |
| EPA | <--- | KSCC | .224 | .044 | 5.060 | *** | par_23 |
| AEAf1 | <--- | EAA | 1.000 | | | | |
| AEAf2 | <--- | EAA | .924 | .069 | 13.423 | *** | par_1 |
| AEAf4 | <--- | EAA | 1.101 | .068 | 16.186 | *** | par_2 |
| AEAp1 | <--- | EAA | .990 | .043 | 23.083 | *** | par_3 |
| AEAp3 | <--- | EAA | 1.065 | .072 | 14.703 | *** | par_4 |
| AEAp4 | <--- | EAA | 1.091 | .070 | 15.596 | *** | par_5 |
| PEAf1 | <--- | EPA | 1.000 | | | | |
| PEAf4 | <--- | EPA | 1.077 | .066 | 16.298 | *** | par_9 |
| PEAf5 | <--- | EPA | 1.041 | .073 | 14.288 | *** | par_10 |
| PEAp2 | <--- | EPA | .869 | .058 | 14.987 | *** | par_11 |
| PEAp3 | <--- | EPA | .884 | .059 | 14.927 | *** | par_12 |
| PEAp4 | <--- | EPA | 1.078 | .065 | 16.492 | *** | par_13 |
| KSC4 | <--- | KSCC | .647 | .052 | 12.537 | *** | par_17 |
| KSC3 | <--- | KSCC | .695 | .055 | 12.681 | *** | par_18 |
| KSC2 | <--- | KSCC | .660 | .053 | 12.513 | *** | par_19 |
| KSC1 | <--- | KSCC | .885 | .056 | 15.917 | *** | par_20 |

The factor loadings for all the items are statistically significant in the predicted direction. The estimated direct effects of KSCC on EAA and EPA are 0.297 and 0.224 respectively, and this suggests that when KSCC goes up by 1, EAA and EPA go up by 0.297 and 0.224 respectively. Therefore, there is sufficient evidence to support that a Knowledge Sharing Culture positively relates to active and passive Contextual Individual Ambidexterity of the shop-floor employees, thus proving H12. This statistical evidence confirms the position of O'Reilly et al. (1991) on the influence of Knowledge Sharing Culture on the individual employee's ability to contribute to the exploitation of existing market opportunities and the exploration of new opportunities towards sustainable organisational growth.

### 7.2.16 Research Hypothesis 13

H13 proposed that a Knowledge Sharing Culture will positively relate to Organisational Innovation capability. Figure 7.16 shows the structural relationship between KSCC and ORGIN.

**Figure 7.16: Structural Model Validating the Research Hypothesis 13**




The standardised regression weights are shown in Figure 7.16 for all the observed items in the independent and dependent latent variables. The SRWE of 0.40 indicates a positive relationship between KSCC and ORGIN. The summary of fit indices for the structural model validating H13 is given in Table 7.32.

**Table 7.32: Multiple Fit Indices for Structural Model validating H13**

| CMIN/DF | GFI | TLI | CFI | RMSEA | PCLOSE |
|---|---|---|---|---|---|
| 1.509 | 0.848 | 0.941 | 0.956 | 0.093 | 0.066 |

The results in Table 7.32 confirm that the model fits the data well. Table 7.33 shows the regression weight estimate and the corresponding standard error and p-value for each of the items.

**Table 7.33: Regression Weights for Structural Model validating H13**

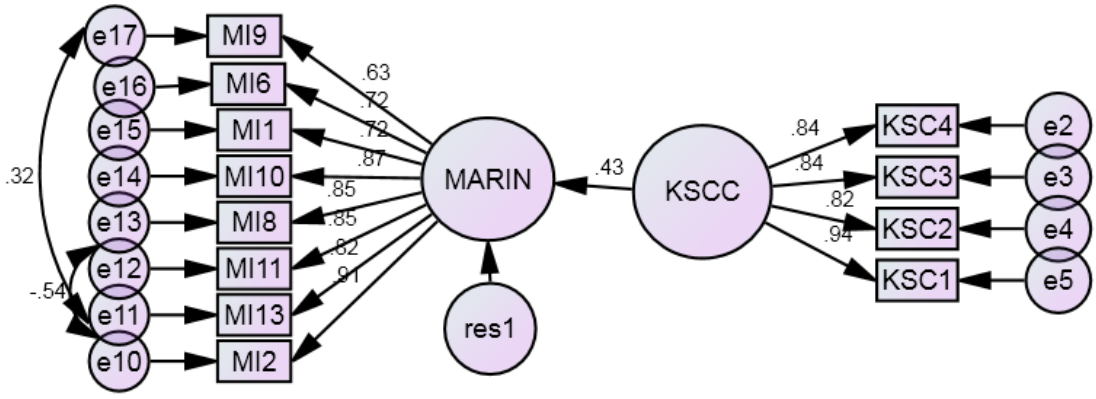
| | | | Estimate | S.E. | C.R. | P | Label |
|---|---|---|---|---|---|---|---|
| ORGIN | <--- | KSCC | .273 | .094 | 2.909 | .004 | par_15 |
| OI2 | <--- | ORGIN | 1.000 | | | | |
| OI5 | <--- | ORGIN | 1.042 | .111 | 9.399 | *** | par_1 |
| OI1 | <--- | ORGIN | 1.002 | .094 | 10.609 | *** | par_2 |
| OI7 | <--- | ORGIN | .811 | .136 | 5.955 | *** | par_3 |
| OI4 | <--- | ORGIN | 1.000 | .127 | 7.870 | *** | par_4 |
| OI9 | <--- | ORGIN | .855 | .129 | 6.627 | *** | par_5 |
| OI10 | <--- | ORGIN | .852 | .120 | 7.112 | *** | par_6 |
| OI6 | <--- | ORGIN | .801 | .123 | 6.531 | *** | par_7 |
| KSC4 | <--- | KSCC | .669 | .085 | 7.834 | *** | par_11 |
| KSC3 | <--- | KSCC | .665 | .085 | 7.810 | *** | par_12 |
| KSC2 | <--- | KSCC | .582 | .077 | 7.536 | *** | par_13 |
| KSC1 | <--- | KSCC | .699 | .075 | 9.286 | *** | par_14 |

As shown in Table 7.33, the factor loadings for all the items are statistically significant in the predicted direction. The estimated direct effect of KSCC on ORGIN shows that when KSCC goes up by 1, ORGIN goes up by 0.273. Therefore, there is sufficient evidence to support that a Knowledge Sharing Culture positively relates to Organisational Innovation capability, thus proving H13. This evidence shows that a culture that promotes knowledge sharing among the employees is important to introduction and implementation of a new organisational method in the business practices, workplace organisation or external relations.

### 7.2.17 Research Hypothesis 14

H14 proposed that a Knowledge Sharing Culture (KSCC) will positively relate to Marketing Innovation capability (MARIN) Figure 7.17 shows the structural relationship between KSCC and MARIN.

**Figure 7.17: Structural Model Validating the Research Hypothesis 14**



The standardised regression weights are shown in Figure 7.17 for all the observed items in the independent and dependent latent variables. The SRWE of .43 indicates a positive relationship between KSCC and MARIN. The summary of fit indices for the structural model validating H14 is given in Table 7.34.

**Table 7.34: Multiple Fit Indices for Structural Model validating H14**

| CMIN/DF | GFI | TLI | CFI | RMSEA | PCLOSE |
|---|---|---|---|---|---|
| 1.444 | 0.845 | 0.946 | 0.958 | 0.087 | 0.100 |

Table 7.34 confirms that the model fits the data well. Table 7.35 shows the regression weight estimate and the corresponding standard error and p-value for each of the items.

**Table 7.35: Regression Weights for Structural Model validating H14**

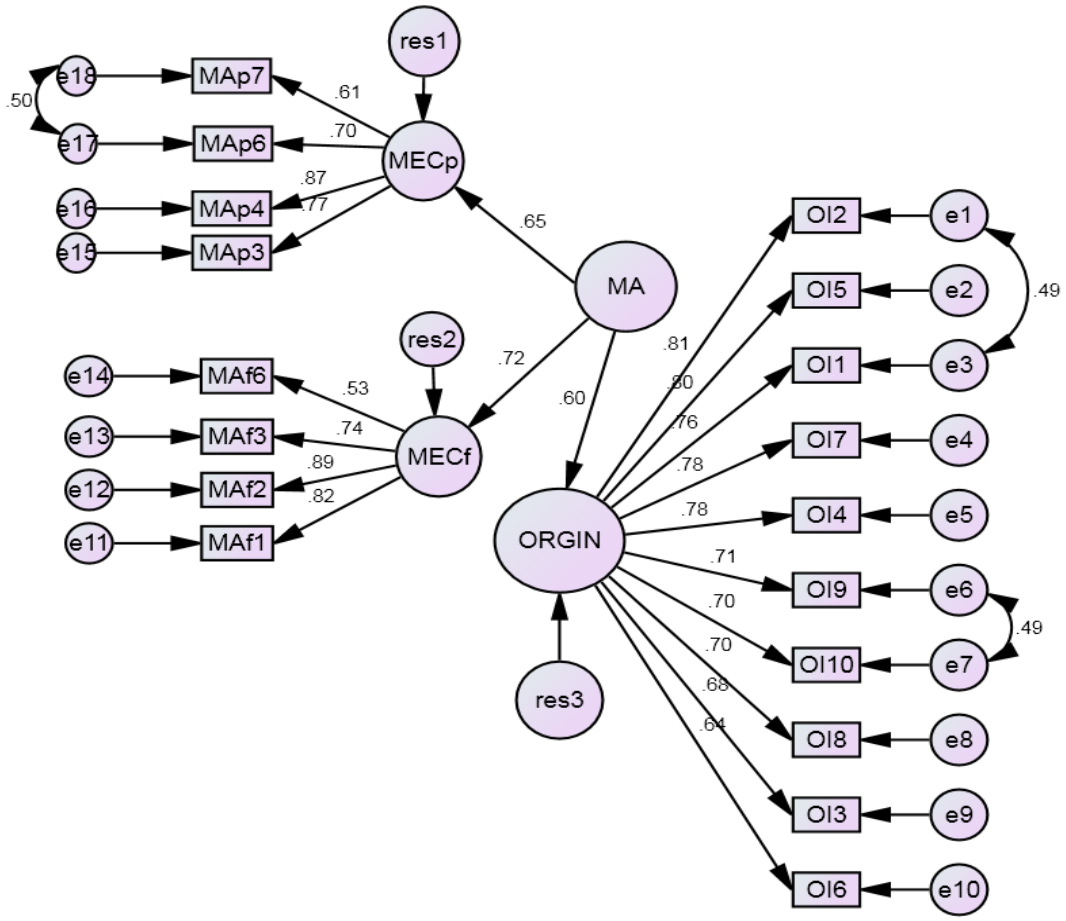
| | | | Estimate | S.E. | C.R. | P | Label |
|---|---|---|---|---|---|---|---|
| MARIN | <--- | KSCC | .319 | .099 | 3.204 | .001 | par_14 |
| MI2 | <--- | MARIN | 1.000 | | | | |
| MI13 | <--- | MARIN | .833 | .094 | 8.893 | *** | par_1 |
| MI11 | <--- | MARIN | .840 | .088 | 9.496 | *** | par_2 |
| MI8 | <--- | MARIN | 1.064 | .138 | 7.722 | *** | par_3 |
| MI10 | <--- | MARIN | .830 | .083 | 9.962 | *** | par_4 |
| MI1 | <--- | MARIN | .760 | .108 | 7.034 | *** | par_5 |
| MI6 | <--- | MARIN | .735 | .106 | 6.910 | *** | par_6 |
| MI9 | <--- | MARIN | .548 | .097 | 5.677 | *** | par_7 |
| KSC4 | <--- | KSCC | .668 | .085 | 7.828 | *** | par_10 |
| KSC3 | <--- | KSCC | .664 | .085 | 7.792 | *** | par_11 |
| KSC2 | <--- | KSCC | .582 | .077 | 7.527 | *** | par_12 |
| KSC1 | <--- | KSCC | .700 | .075 | 9.319 | *** | par_13 |

The factor loadings for all the items are statistically significant in the predicted direction. The estimated direct effect of KSCC on MARIN shows that when KSCC goes up by 1, MARIN goes up by 0.319. Therefore, there is sufficient evidence to support that a Knowledge Sharing Culture positively relates to Marketing Innovation capability, thus confirming H14. This shows that a culture that promotes knowledge sharing among the employees is necessary for the implementation of a new marketing method that involves significant changes in product packaging, product placement, product promotion or pricing.

### 7.2.18 Research Hypothesis 15

H15 proposed that Contextual Individual Ambidexterity of the managerial staff will positively relate to Organisational Innovation capability. Figure 7.18 shows the structural relationship between MA and ORGIN.

**Figure 7.18: Structural Model Validating the Research Hypothesis 15**




The standardised regression weights are shown in Figure 7.18 for all the observed items in the exogenous (independent) and endogenous (dependent) latent variables. The SRWE of .60 indicates a strong positive relationship between the two latent variables, MA and ORGIN. The fit indices for the structural model validating H15 are presented in Table 7.36.

**Table 7.36: Multiple Fit Indices for Structural Model validating H15**

| CMIN/DF | GFI | TLI | CFI | RMSEA | PCLOSE |
|---|---|---|---|---|---|
| 1.772 | 0.896 | 0.942 | 0.951 | 0.062 | 0.065 |

The model satisfies the requirements for multiple fit indices and confirms that it fits the data well. Table 7.37 shows the regression weight estimate and the corresponding standard error and p-value for each of the items.

**Table 7.37: Regression Weights for Structural Model validating H15**

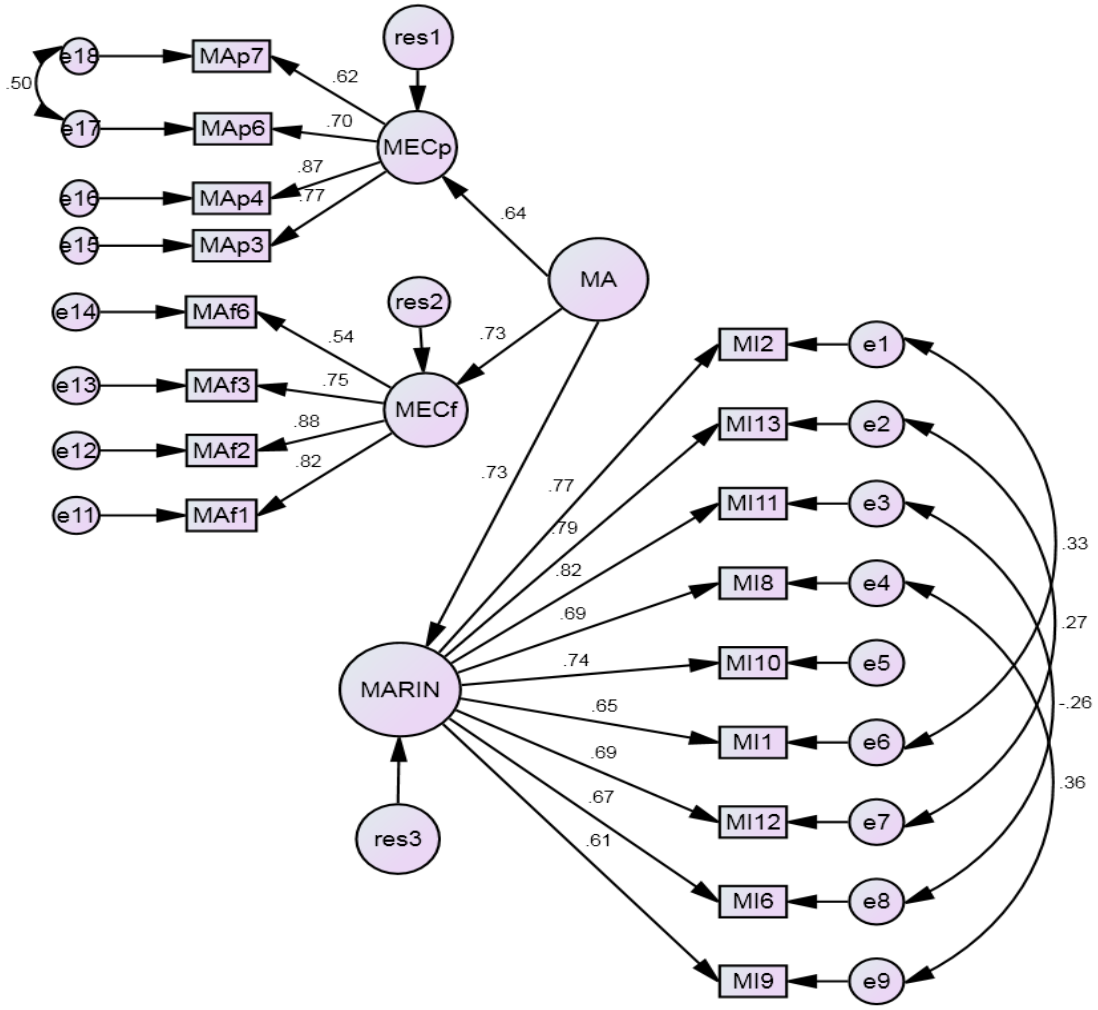
| | | | Estimate | S.E. | C.R. | P | Label |
|---|---|---|---|---|---|---|---|
| MECp | <--- | MA | .470 | .075 | 6.259 | *** | par_7 |
| MECf | <--- | MA | .593 | .087 | 6.833 | *** | par_8 |
| ORGIN | <--- | MA | .400 | .070 | 5.734 | *** | par_21 |
| MAf1 | <--- | MECf | 1.000 | | | | |
| MAf2 | <--- | MECf | 1.036 | .079 | 13.167 | *** | par_1 |
| MAf3 | <--- | MECf | .824 | .074 | 11.198 | *** | par_2 |
| MAf6 | <--- | MECf | .598 | .080 | 7.501 | *** | par_3 |
| MAp3 | <--- | MECp | 1.000 | | | | |
| MAp4 | <--- | MECp | 1.143 | .105 | 10.875 | *** | par_4 |
| MAp6 | <--- | MECp | .847 | .089 | 9.505 | *** | par_5 |
| MAp7 | <--- | MECp | .809 | .098 | 8.275 | *** | par_6 |
| OI2 | <--- | ORGIN | 1.181 | .124 | 9.536 | *** | par_10 |
| OI5 | <--- | ORGIN | 1.225 | .130 | 9.449 | *** | par_11 |
| OI1 | <--- | ORGIN | 1.160 | .128 | 9.070 | *** | par_12 |
| OI7 | <--- | ORGIN | 1.234 | .133 | 9.252 | *** | par_13 |
| OI4 | <--- | ORGIN | 1.201 | .130 | 9.254 | *** | par_14 |
| OI9 | <--- | ORGIN | 1.052 | .122 | 8.600 | *** | par_15 |
| OI10 | <--- | ORGIN | .941 | .111 | 8.497 | *** | par_16 |
| OI8 | <--- | ORGIN | 1.039 | .121 | 8.572 | *** | par_17 |
| OI3 | <--- | ORGIN | 1.096 | .132 | 8.305 | *** | par_18 |
| OI6 | <--- | ORGIN | 1.000 | | | | |

As shown in Table 7.37, the factor loadings for all the items are statistically significant in the predicted direction. The estimated direct effect of MA on ORGIN shows that when MA goes up by 1, ORGIN goes up by 0.400. Therefore, there is sufficient evidence to support that Contextual Individual Ambidexterity of the managerial staff positively relates to Organisational Innovation capability, thus validating H15. This study confirms that the ability of the managerial staff to optimally use the organisational resources in meeting both the present needs and the future needs of the organisation positively relates Organisational Innovation capability. Ambidextrous managers will promote introduction and implementation of a new organisational method in the business practices, workplace organisation or external relations.

### 7.2.19 Research Hypothesis 16

H16 proposed that Contextual Individual Ambidexterity of the managerial staff will positively relate to Marketing Innovation capability. Figure 7.19 shows the structural relationship between MA and MARIN.

**Figure 7.19: Structural Model Validating the Research Hypothesis 16**




The standardised regression weights are shown in Figure 7.19 for all the observed items in the independent and dependent latent variables. The SRWE of 0.73 indicates a very strong positive relationship between the two latent variables, MA and MARIN. The fit indices for the structural model validating H16 are given in Table 7.38.

**Table 7.38: Multiple Fit Indices for Structural Model validating H16**

| CMIN/DF | GFI | TLI | CFI | RMSEA | PCLOSE |
|---|---|---|---|---|---|
| 1.745 | 0.908 | 0.944 | 0.954 | 0.061 | 0.105 |

As shown in Table 7.38, the model satisfies the requirements for multiple fit indices, and confirms that the model fits the data exceptionally well. Table 7.39 shows the regression weight estimate and the corresponding standard error and p-value for each of the items.

**Table 7.39: Regression Weights for Structural Model validating H16**

| | | | Estimate | S.E. | C.R. | P | Label |
|---|---|---|---|---|---|---|---|
| MECp | <--- | MA | .463 | .069 | 6.724 | *** | par_7 |
| MECf | <--- | MA | .608 | .079 | 7.664 | *** | par_8 |
| MARIN | <--- | MA | .394 | .060 | 6.566 | *** | par_22 |
| MAf1 | <--- | MECf | 1.000 | | | | |
| MAf2 | <--- | MECf | 1.025 | .078 | 13.178 | *** | par_1 |
| MAf3 | <--- | MECf | .830 | .073 | 11.302 | *** | par_2 |
| MAf6 | <--- | MECf | .604 | .080 | 7.588 | *** | par_3 |
| MAp3 | <--- | MECp | 1.000 | | | | |
| MAp4 | <--- | MECp | 1.138 | .104 | 10.951 | *** | par_4 |
| MAp6 | <--- | MECp | .847 | .089 | 9.523 | *** | par_5 |
| MAp7 | <--- | MECp | .813 | .098 | 8.327 | *** | par_6 |
| MI2 | <--- | MARIN | 1.373 | .159 | 8.634 | *** | par_10 |
| MI13 | <--- | MARIN | 1.449 | .165 | 8.775 | *** | par_11 |
| MI11 | <--- | MARIN | 1.467 | .164 | 8.926 | *** | par_12 |
| MI8 | <--- | MARIN | 1.306 | .131 | 9.984 | *** | par_13 |
| MI10 | <--- | MARIN | 1.299 | .154 | 8.438 | *** | par_14 |
| MI1 | <--- | MARIN | 1.289 | .169 | 7.649 | *** | par_15 |
| MI12 | <--- | MARIN | 1.215 | .153 | 7.947 | *** | par_16 |
| MI6 | <--- | MARIN | 1.217 | .158 | 7.707 | *** | par_17 |
| MI9 | <--- | MARIN | 1.000 | | | | |

All the factor loadings for all the items are statistically significant in the predicted direction. The estimated direct effect of MA on MARIN shows that when MA goes up by 1, MARIN goes up by 0.394. Therefore, there is sufficient evidence to support that Contextual Individual Ambidexterity of the managerial staff positively relates to Marketing Innovation capability, thus proving H16. For this reason, this study confirms that the ability of the managerial staff to optimally use the organisational resources in meeting both the present needs and the future needs of the organisation positively relates Marketing Innovation capability. Going by this statistical evidence, ambidextrous managers will promote introduction and implementation of a new marketing method that involves significant changes in product packaging, product placement, product promotion or pricing.

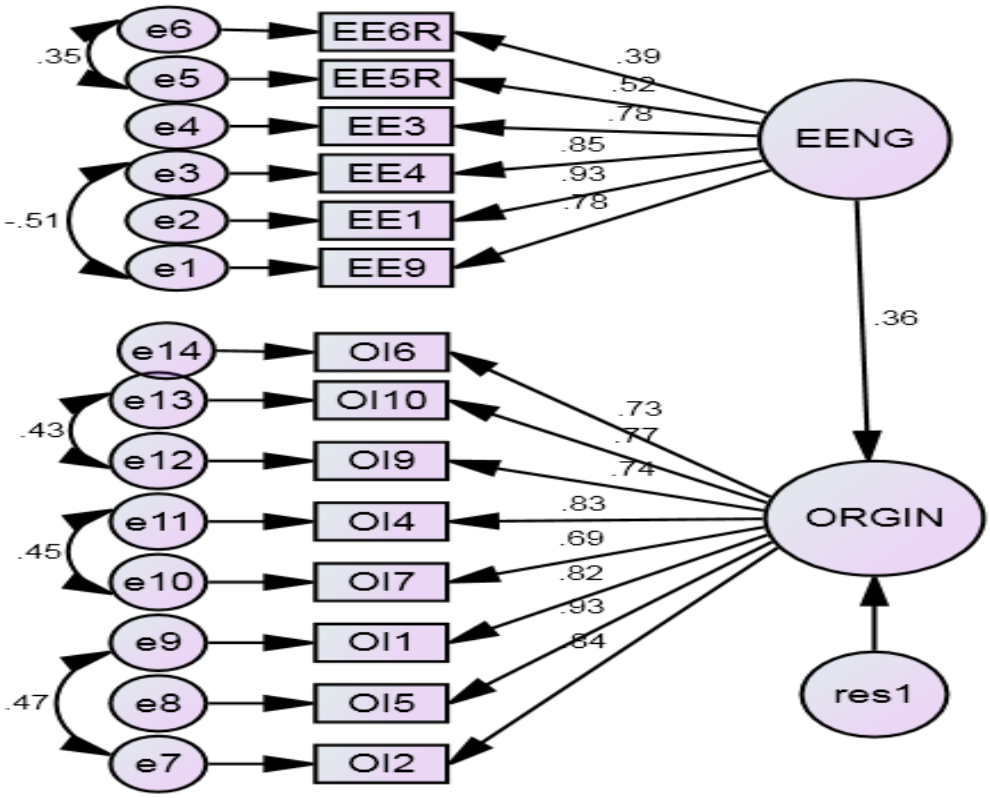
## 7.3 Emerging Hypotheses from the Qualitative Phase of the Study

As identified earlier in chapter 4, four additional research hypotheses emerged from the qualitative phase of this study. The data collected in the analytical research phase provided sufficient quantitative data to model and test these additional propositions.

### 7.3.1 Research Hypothesis 17

H17 proposed that Employee Engagement will positively relate to Organisational Innovation capability. Figure 7.20 shows the structural relationship between Employee Engagement (EENG) and ORGIN in H17.

**Figure 7.20: Structural Model Validating the Research Hypothesis 17**




The standardised regression weights are shown in Figure 7.20 for all the observed items in the exogenous (independent) and endogenous (dependent) latent variables. The SRWE of 0.36 indicates a positive relationship between the two latent variables, EENG and ORGIN. The summary of fit indices for the structural model validating H17 is presented in Table 7.40.

**Table 7.40: Multiple Fit Indices for Structural Model validating H17**

| CMIN/DF | GFI | TLI | CFI | RMSEA | PCLOSE |
|---|---|---|---|---|---|
| 1.522 | 0.820 | 0.920 | 0.938 | 0.094 | 0.033 |

As shown in Table 7.40, the model satisfies the requirements for multiple fit indices. Although GFI slightly falls below 0.900; the model fits the data to an acceptable level based on the other fit indices. Table 7.41 shows the regression weight estimate and the corresponding standard error and p-value for each of the items.

**Table 7.41: Regression Weights for Structural Model validating H17**

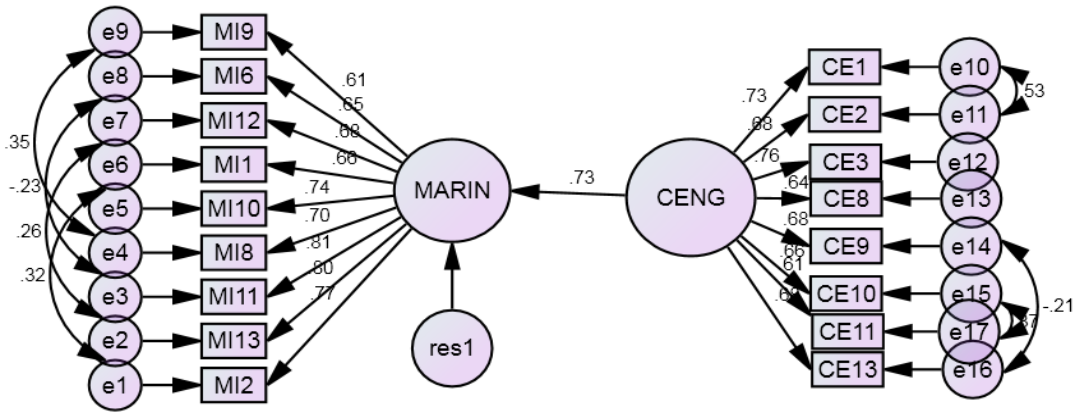
| | | | Estimate | S.E. | C.R. | P | Label |
|---|---|---|---|---|---|---|---|
| ORGIN | <--- | EENG | .245 | .093 | 2.630 | .009 | par_19 |
| EE9 | <--- | EENG | .615 | .089 | 6.907 | *** | par_1 |
| EE1 | <--- | EENG | .585 | .063 | 9.242 | *** | par_2 |
| EE4 | <--- | EENG | .673 | .085 | 7.907 | *** | par_3 |
| EE3 | <--- | EENG | .594 | .084 | 7.099 | *** | par_4 |
| EE5R | <--- | EENG | .406 | .097 | 4.179 | *** | par_5 |
| EE6R | <--- | EENG | .315 | .104 | 3.026 | .002 | par_6 |
| OI2 | <--- | ORGIN | 1.000 | | | | |
| OI5 | <--- | ORGIN | 1.050 | .112 | 9.411 | *** | par_9 |
| OI1 | <--- | ORGIN | 1.003 | .095 | 10.589 | *** | par_10 |
| OI7 | <--- | ORGIN | .815 | .137 | 5.955 | *** | par_11 |
| OI4 | <--- | ORGIN | 1.002 | .128 | 7.824 | *** | par_12 |
| OI9 | <--- | ORGIN | .855 | .130 | 6.579 | *** | par_13 |
| OI10 | <--- | ORGIN | .850 | .121 | 7.027 | *** | par_14 |
| OI6 | <--- | ORGIN | .804 | .123 | 6.512 | *** | par_15 |

The factor loadings for all the items are statistically significant in the predicted direction. The estimated direct effect of EENG on indicates that when EENG goes up by 1, ORGIN goes up by 0.245. Therefore, there is sufficient evidence to support that Employee Engagement positively relates to Organisational Innovation capability, thus proving H17 and confirming the initial finding from the exploratory phase. This suggests that engaged and committed employees are required for successful introduction and implementation of a new organisational method in the business practices, workplace organisation or external relations.

### 7.3.2 Research Hypothesis 18

H18 proposed that Customer Engagement will positively relate to Marketing Innovation capability. Figure 7.21 shows the structural relationship between Customer Engagement (CENG) and ORGIN.

**Figure 7.21: Structural Model Validating the Research Hypothesis 18**



The standardised regression weights are shown in Figure 7.21 for all the observed items in the exogenous and endogenous latent variables. The SRWE of 0.73 indicates a very strong positive relationship between the two latent variables, CENG and MARIN. The summary of fit indices for the structural model validating H18 is presented in Table 7.42.

**Table 7.42: Multiple Fit Indices for Structural Model validating H18**

| CMIN/DF | GFI | TLI | CFI | RMSEA | PCLOSE |
|---|---|---|---|---|---|
| 1.786 | 0.897 | 0.941 | 0.952 | 0.063 | 0.073 |

Table 7.42 shows that the model fits the data to an acceptable level. Table 7.43 shows the regression weight estimate and the corresponding standard error and p-value for each of the items.

**Table 7.43: Regression Weights for Structural Model validating H18**

| | | | Estimate | S.E. | C.R. | P | Label |
|---|---|---|---|---|---|---|---|
| MARIN | <--- | CENG | .540 | .059 | 9.135 | *** | par_24 |
| CE1 | <--- | CENG | .782 | .068 | 11.544 | *** | par_1 |
| CE2 | <--- | CENG | .625 | .060 | 10.354 | *** | par_2 |
| CE3 | <--- | CENG | .733 | .060 | 12.169 | *** | par_3 |
| CE8 | <--- | CENG | .635 | .066 | 9.590 | *** | par_4 |
| CE9 | <--- | CENG | .664 | .064 | 10.339 | *** | par_5 |
| CE10 | <--- | CENG | .653 | .066 | 9.922 | *** | par_6 |
| CE13 | <--- | CENG | .735 | .072 | 10.269 | *** | par_7 |
| CE11 | <--- | CENG | .564 | .063 | 8.950 | *** | par_8 |
| MI2 | <--- | MARIN | 1.000 | | | | |
| MI13 | <--- | MARIN | 1.063 | .089 | 11.928 | *** | par_12 |
| MI11 | <--- | MARIN | 1.058 | .088 | 12.092 | *** | par_13 |
| MI8 | <--- | MARIN | .950 | .093 | 10.192 | *** | par_14 |
| MI10 | <--- | MARIN | .931 | .086 | 10.836 | *** | par_15 |
| MI1 | <--- | MARIN | .947 | .082 | 11.488 | *** | par_16 |
| MI12 | <--- | MARIN | .874 | .089 | 9.870 | *** | par_17 |
| MI6 | <--- | MARIN | .862 | .093 | 9.290 | *** | par_18 |
| MI9 | <--- | MARIN | .722 | .083 | 8.659 | *** | par_19 |

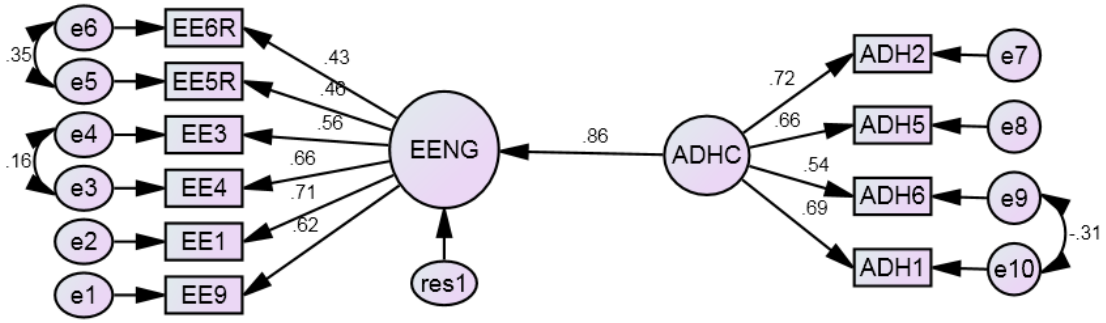
The factor loadings for all the items are statistically significant in the predicted direction. The estimated direct effect of CENG on MARIN shows that when CENG goes up by 1, MARIN goes up by 0.540. Therefore, there is sufficient evidence to support that Customer Engagement positively relates to Marketing Innovation capability, thus proving H18 and confirming finding from the qualitative phase of this research. Finding suggests that engaged customers will contribute to successful

introduction and implementation of significant changes in product packaging, product placement, product promotion or pricing in any organisations.

### 7.3.3 Research Hypothesis 19

H19 proposed that an Adhocracy Culture will promote Employee Engagement. Figure 7.22 shows the structural relationship between ADHC and EENG.

**Figure 7.22: Structural Model Validating the Research Hypothesis 19**




The standardised regression weights are shown in Figure 7.22 for all the observed items in the two latent variables. The SRWE of 0.86 indicates a very strong positive relationship between ADHC and EENG. The summary of fit indices for the structural model validating H19 is given in Table 7.44.

**Table 7.44: Multiple Fit Indices for Structural Model validating H19**

| CMIN/DF | GFI | TLI | CFI | RMSEA | PCLOSE |
|---|---|---|---|---|---|
| 2.653 | 0.961 | 0.935 | 0.955 | 0.065 | 0.075 |

Thus the model satisfies the requirements for multiple fit indices and fits the data exceptionally well. Table 7.45 shows the regression weight estimate and the corresponding standard error and p-value for each of the items.

**Table 7.45: Regression Weights for Structural Model validating H19**

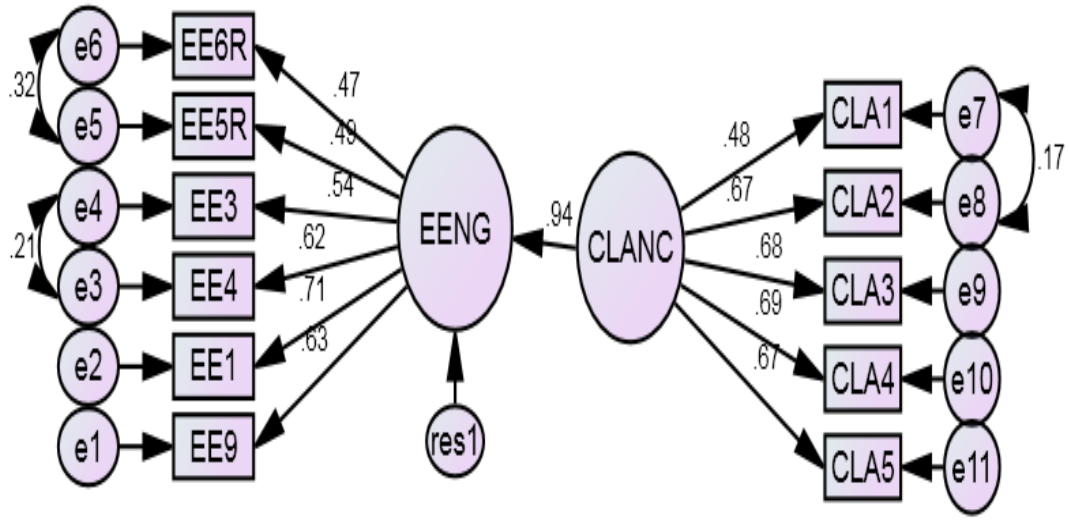
| | | | Estimate | S.E. | C.R. | P | Label |
|---|---|---|---|---|---|---|---|
| EENG | <--- | ADHC | .618 | .056 | 11.041 | *** | par_13 |
| ADH2 | <--- | ADHC | .719 | .047 | 15.260 | *** | par_1 |
| ADH5 | <--- | ADHC | .629 | .046 | 13.639 | *** | par_2 |
| ADH6 | <--- | ADHC | .542 | .053 | 10.232 | *** | par_3 |
| ADH1 | <--- | ADHC | .655 | .047 | 13.987 | *** | par_4 |
| EE9 | <--- | EENG | 1.000 | | | | |
| EE1 | <--- | EENG | .969 | .091 | 10.685 | *** | par_6 |
| EE4 | <--- | EENG | .969 | .095 | 10.153 | *** | par_7 |
| EE3 | <--- | EENG | .885 | .099 | 8.927 | *** | par_8 |
| EE5R | <--- | EENG | .730 | .096 | 7.607 | *** | par_9 |
| EE6R | <--- | EENG | .714 | .098 | 7.260 | *** | par_10 |

As shown in Table 7.45, all factor loadings are in the predicted direction. The estimated direct effect of ADHC on EENG suggests that when ADHC goes up by 1, EENG goes up by 0.618. Therefore, there is sufficient evidence to support that an Adhocracy Culture promotes Employee Engagement, thus validating H19. This statistical evidence confirms finding from the explorative phase of this research. Therefore, an organisational culture that supports flexibility and creativity is a necessary antecedent to improving employee's level of engagement.

### 7.3.4 Research Hypothesis 20

H20 proposed that a Clan Culture will promote Employee Engagement. Figure 7.23 shows the structural relationship between CLANC and EENG.

**Figure 7.23: Structural Model Validating the Research Hypothesis 20**




The standardised regression weights are shown in Figure 7.23 for all the observed items in the two latent variables. The SRWE of 0.94 indicates a very strong positive relationship between CLANC and EENG. The summary of fit indices for the structural model validating H20 is given in Table 7.46.

**Table 7.46: Multiple Fit Indices for Structural Model validating H20**

| CMIN/DF | GFI | TLI | CFI | RMSEA | PCLOSE |
|---|---|---|---|---|---|
| 1.306 | .976 | .987 | .991 | .028 | .974 |

Table 7.46 shows that the model satisfies the requirements for multiple fit indices and fits the data exceptionally well. Table 7.47 shows the regression weight estimate and the corresponding standard error and p-value for each of the items. All factor loadings are in the predicted direction.

**Table 7.47: Regression Weights for Structural Model validating H20**

| | | | Estimate | S.E. | C.R. | P | Label |
|---|---|---|---|---|---|---|---|
| EENG | <--- | CLANC | .687 | .057 | 12.153 | *** | par_11 |
| EE9 | <--- | EENG | 1.000 | | | | |
| EE1 | <--- | EENG | .955 | .085 | 11.227 | *** | par_1 |
| EE4 | <--- | EENG | .888 | .088 | 10.095 | *** | par_2 |
| EE3 | <--- | EENG | .827 | .092 | 8.956 | *** | par_3 |
| EE5R | <--- | EENG | .766 | .092 | 8.303 | *** | par_4 |
| EE6R | <--- | EENG | .759 | .095 | 8.010 | *** | par_5 |
| CLA1 | <--- | CLANC | .611 | .066 | 9.319 | *** | par_6 |
| CLA2 | <--- | CLANC | .781 | .055 | 14.091 | *** | par_7 |
| CLA3 | <--- | CLANC | .633 | .044 | 14.241 | *** | par_8 |
| CLA4 | <--- | CLANC | .695 | .048 | 14.429 | *** | par_9 |
| CLA5 | <--- | CLANC | .721 | .052 | 13.992 | *** | par_10 |

The estimated direct effect of CLANC on EENG indicates that when CLANC goes up by 1, EENG goes up by 0.687. Therefore, there is sufficient evidence to support that a Clan Culture promotes Employee Engagement, thus confirming H20. This statistical evidence also confirms finding from the explorative phase of this research. A family-like organisational culture that supports teamwork; employee involvement and empowerment; and corporate commitment to employee wellbeing, is a necessary antecedent for improving the level of employee engagement.

## 7.4 Effect of Employee Attributes on Ambidexterity

Individual level attributes sometimes influence responses and such attributes may influence employee ambidexterity (Mom et al., 2009; Tushman and O'Reilly, 1996). What follows is an analysis of the data with respect to employee age; working experience; and level of education on individual ambidexterity.

### 7.4.1 Effect of Age

Figure 7.24a and 7.24b show the explorative assessment of the effect of employee age on the ambidexterity of the managerial staff and the shop-floor staff respectively.

**Figure 7.24: Explorative Assessment of Effect of Employee Age on Ambidexterity**

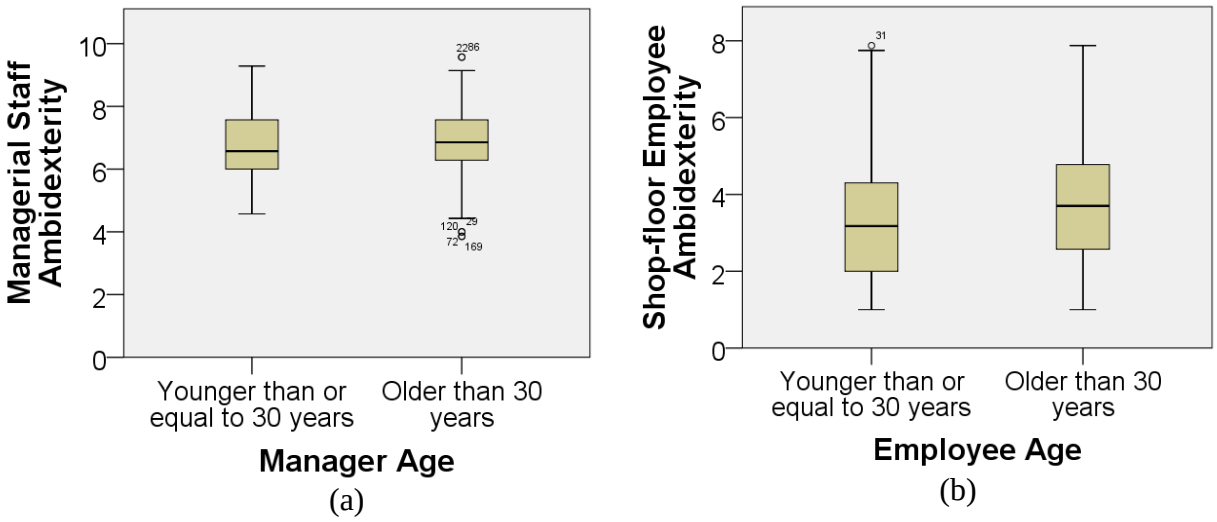



Figure 7.24 compares the ambidexterity of two groups of employees: (1) employees who are less than or equal to 30 years, and (2) employees older than 30 years. Figures 7.24a and 7.24b show that managerial staff employees have a higher level of ambidexterity than shop-floor employees. This is expected as managerial employees are more involved and empowered in decision making than shop-floor employees. Comparison of the two age groups shows that there is little or no difference exists between managers and shop-floor employees with respect to age. Table 7.48 gives the results from statistical analysis within the managerial and shop-floor staff age groups.

**Table 7.48: Mann-Whitney Test Statistics for Age Effect on Ambidexterity**

| | Managerial Staff Ambidexterity | | Shop-floor Employee Ambidexterity |
|---|---|---|---|
| Mann-Whitney U | 4441.000 | Mann-Whitney U | 14685.500 |
| Wilcoxon W | 7762.000 | Wilcoxon W | 46816.500 |
| Z | -1.130 | Z | -3.312 |
| Asymp. Sig. (2-tailed) | .259 | Asymp. Sig. (2-tailed) | .001 |

a. Grouping Variable: Age

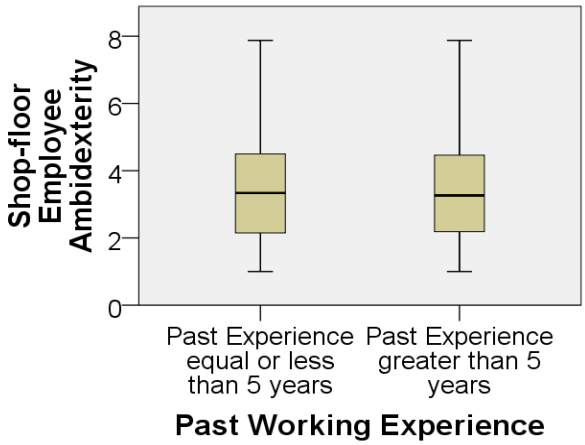
Table 7.48 shows that the effect of age is significant on shop-floor staff employee ambidexterity ($p$ = 0.001, 2-tailed). However, there is no significant difference of managerial staff ambidexterity ($p$ = .259, 2-tailed) between the two age groups.

### 7.4.2 Effect of Past Working Experience

Figures 7.25a and 7.25b show the explorative assessment of past working experience on the ambidexterity of the managerial staff and the shop-floor staff respectively.

**Figure 7.25: Explorative Assessment of Effect of Past Working Experience on Ambidexterity**


(a)




(b)

Figure 7.25 compares ambidexterity for: (1) employees with 5 or less years of previous working experience, and (2) employees whose previous working experience exceeds 5 years. From Figure 7.25a, it appears that past working experience does have a slight impact on the level of managerial staff ambidexterity but does not have any significant impact on that of shop-floor employees. The result in Table 7.49 confirms these findings.

**Table 7.49: Mann-Whitney Test Statistics for Effect of Past Working Experience on Ambidexterity**

| | Managerial Staff Ambidexterity | | Shop-floor Employee Ambidexterity |
|---|---|---|---|
| Mann-Whitney U | 2583.000 | Mann-Whitney U | 10562.000 |
| Wilcoxon W | 15624.000 | Wilcoxon W | 66507.000 |
| Z | -2.150 | Z | -.150 |
| Asymp. Sig. (2-tailed) | .032 | Asymp. Sig. (2-tailed) | .881 |

a. Grouping Variable: Past Working Experience

While past working experience is shown as significant to the ability of the managers to concurrently *exploit* current market opportunities and *explore* future market opportunities ($p$ = 0.032, 2-tailed), past working experience of the shop-floor employees does not appear to have significant impact on their level of ambidexterity.

### 7.4.3 Effect of Present Working Experience

Figure 7.26a and 7.26b show the explorative assessment of the present working experience on the ambidexterity of the managerial staff and the shop-floor staff respectively.

**Figure 7.26: Explorative Assessment of Effect of Present Working Experience on Ambidexterity**

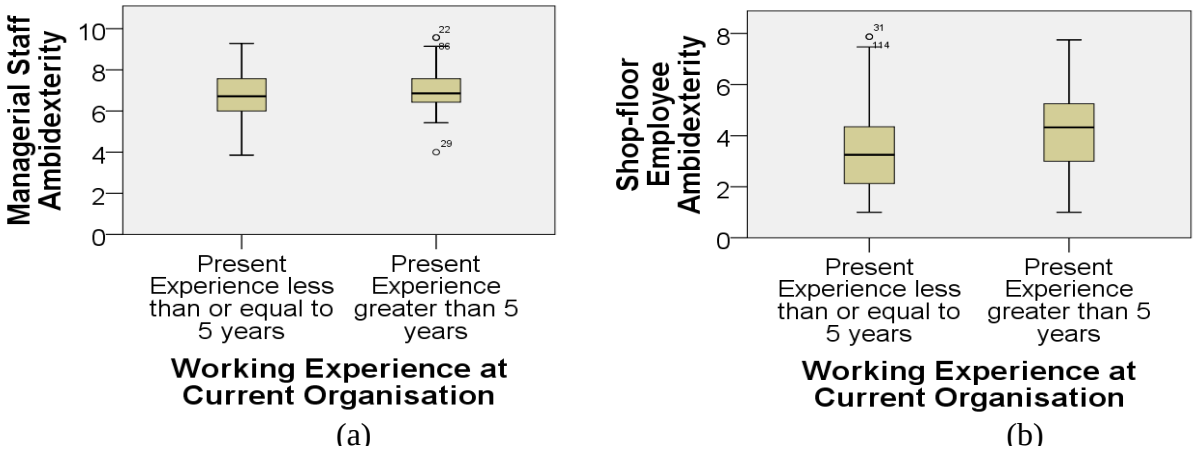



Figure 7.26 compares ambidexterity for: (1) employees with 5 or less years in their current organisation, and (2) employees with more than 5 years in their current organisation. From Figure 7.26b, it appears that working experience of the employees at their current organisation does have a significant impact on the level of shop-floor staff ambidexterity but does not have a significant impact on that of their managers (Figure 7.26a). The results shown in Table 7.50 confirm these findings.

**Table 7.50: Mann-Whitney Test Statistics for Effect of Present Working Experience on Ambidexterity**

| | Managerial Staff Ambidexterity | | Shop-floor Employee Ambidexterity |
|---|---|---|---|
| Mann-Whitney U | 3424.000 | Mann-Whitney U | 6457.000 |
| Wilcoxon W | 14749.000 | Wilcoxon W | 66142.000 |
| Z | -1.312 | Z | -3.445 |
| Asymp. Sig. (2-tailed) | .190 | Asymp. Sig. (2-tailed) | .001 |

a. Grouping Variable: Working Experience at Current Organisation

This suggests that working experience at their current organisation has significant impact on the ability of the shop-floor staff to concurrently contribute to the *exploitation* of current market opportunities and to the *exploration* of future market opportunities ($p$ = 0.001, 2-tailed). However, working experience of the managers in their present organisation does not have significant impact on their level of ambidexterity ($p$ = .190).

### 7.4.4 Effect of Employee Academic Qualification

Figure 7.27a and 7.27b show the explorative assessment of the effect of academic qualification on the ambidexterity of managerial staff and shop-floor staff, respectively.

**Figure 7.27: Explorative Assessment of Effect of Academic Qualification on Ambidexterity**

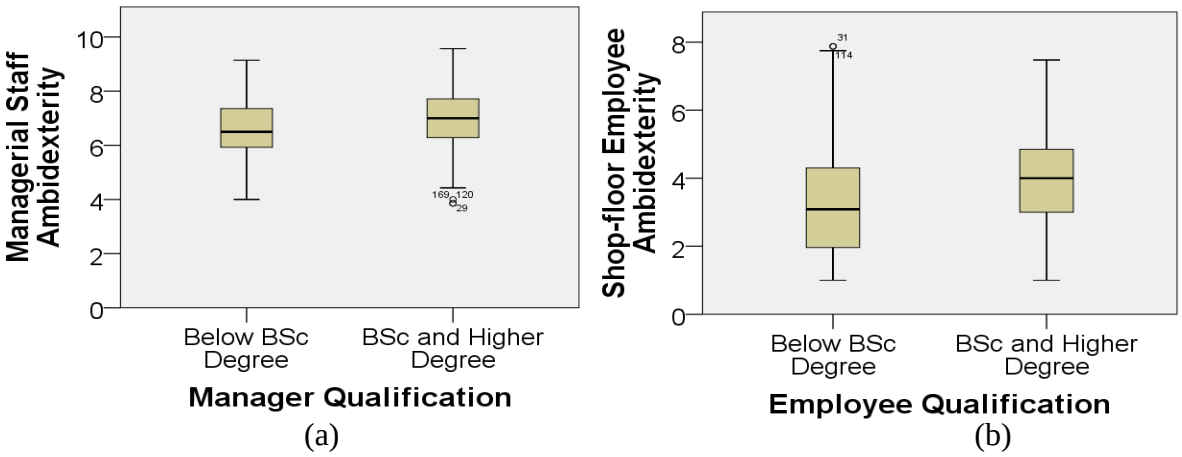



Figure 7.27 compares ambidexterity for: (1) employees with qualification lower than BSc degree, and (2) employees with BSc or higher degree. It appears that employees with a BSc or higher degree have a higher level of ambidexterity than employees with lower qualifications. The results shown in Table 7.51 confirm these findings.

**Table 7.51: Mann-Whitney Test Statistics for Effect of Academic Qualifications on Ambidexterity**

| | Managerial Staff Ambidexterity | | Shop-floor Employee Ambidexterity |
|---|---|---|---|
| Mann-Whitney U | 3588.000 | Mann-Whitney U | 11135.000 |
| Wilcoxon W | 5934.000 | Wilcoxon W | 51605.000 |
| Z | -2.468 | Z | -4.872 |
| Asymp. Sig. (2-tailed) | .014 | Asymp. Sig. (2-tailed) | .000 |

a. Grouping Variable: Academic Qualification

Academic qualifications of the managers appear to have significant impact on their level of ambidexterity ($p = 0.014$, 2-tailed). Academic qualifications of the shop-floor employees show a similar impact on their level of ambidexterity ($p = 0.000$, 2-tailed). The implication drawn from this statistical evidence is that academic qualifications influence the ability of employees to concurrently contribute to the *exploitation* of current market opportunities and to the *exploration* of future market opportunities of their respective organisations.

## 7.5 Summary of Chapter

Table 7.48 provides an overview of the strength of relationship between each respective pair of latent constructs and the corresponding p-value for each of the research hypothesis.

**Table 7.52: Standardised Parameter Estimates and p-values for the Research Hypotheses, H1 to H20.**

| Hypotheses | Path | Standardised Parameter Estimate | p-value |
|---|---|---|---|
| H1 (+) | ORGS ⟶ ORGIN | 0.53 | *** |
| H2 (+) | ORGS ⟶ MARIN | 0.49 | *** |
| H3 (+) | ORGS ⟶ EAA | 0.41 | *** |
| | ORGS ⟶ EPA | 0.36 | *** |
| H4 (+) | ORGS ⟶ MA | 0.49 | .005 |
| H5 (+) | ORGS ⟶ OA | 0.48 | .001 |
| H6 (+) | MA ⟶ OA | 0.85 | *** |
| H7 (+) | MA ⟶ OPM | 0.50 | *** |
| H8 (+) | OA ⟶ OPM | 0.51 | *** |
| H9a (+) | ADHC ⟶ EAA | 0.38 | *** |
| | ADHC ⟶ EPA | 0.33 | *** |
| H9b (+) | CLANC ⟶ EAA | 0.44 | *** |
| | CLANC ⟶ EPA | 0.38 | *** |
| H10a (+) | ADHC ⟶ ORGIN | 0.39 | .005 |
| H10b (+) | CLANC ⟶ ORGIN | 0.33 | .019 |
| H11a (+) | ADHC ⟶ MARIN | 0.43 | .001 |
| H11b (+) | CLANC ⟶ MARIN | 0.42 | .002 |
| H12 (+) | KSCC ⟶ EAA | 0.31 | *** |
| | KSCC ⟶ EPA | 0.29 | *** |
| H13 (+) | KSCC ⟶ ORGIN | 0.40 | .004 |
| H14 (+) | KSCC ⟶ MARIN | 0.43 | .001 |
| H15 (+) | MA ⟶ ORGIN | 0.60 | *** |
| H16 (+) | MA ⟶ MARIN | 0.73 | *** |
| H17 (+) | EENG ⟶ ORGIN | 0.36 | .009 |
| H18 (+) | CENG ⟶ MARIN | 0.73 | *** |
| H19 (+) | ADHC ⟶ EENG | 0.86 | *** |
| H20 (+) | CLANC ⟶ EENG | 0.94 | *** |

This chapter has detailed the analyses and has discussed the relationships between the research constructs. The measurement models in chapter 6 were used to construct the models to test H1 to H20. In addition to achieving good model fit, the findings have indicated parameter estimates that are statistically significant (p-value < 0.05, at the 0.001 level, two-tailed) and in the predicted direction. Estimates towards 1 indicate a strong relationship. For example estimate for H20 indicates a very strong relationship, and shows that a clan culture (CLANC) has a pronounced effect on Employee Engagement (EENG). The result of the structural modelling and relationship testing presented in this chapter has confirmed each of the research hypotheses.

Support for each of the hypotheses shows the favourable organisational context for exploiting the present competitive advantage and exploring the future for continuous survival among the Nigerian Small and Medium-sized Manufacturing and Service organisations. The chapter also presented the effect that individual attributes have on Employee Ambidexterity. Findings have shown how employee age; working experience; and academic qualification affect ambidexterity of participants at managerial and shop-floor staff levels. It has been shown that managerial staff employees have a higher level of ambidexterity than shop-floor employees; this is not unexpected as managers are more involved in decision making than are the employees they manage. The research findings show the significance of Employee Ambidexterity and the soft components of the innovation process in Small and Medium-sized Manufacturing and Service Organisations. Conclusions, recommendations and limitations of the study are covered later in chapter 8.

# Chapter 8

# 8 Conclusions and Recommendations

## 8.1 Introduction

This study has addressed the research gap in organisational context antecedents to individual employee ambidexterity and non-technological innovations in small and medium-sized organisations. The aim of this chapter is to draw together how the research findings have addressed the research objectives and questions. The chapter also examines what contributions this study makes to the body of knowledge on Employee and Organisational Ambidexterity; Marketing Innovation capability; and Organisational Innovation capability, in the context of Small and Medium-sized Manufacturing and Service Organisations.

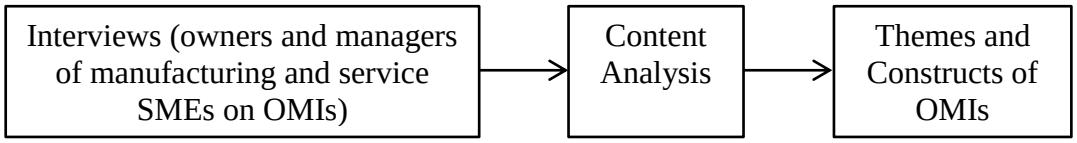
## 8.2 Revisiting the Research Agenda

In order to ensure their continuous survival, Small and Medium-sized Organisations need to concurrently exploit the opportunities in today's markets and focus on strategies towards their survival in the future. Despite theoretical opinions on the relevance of non-technological innovations to sustainable business growth, identified earlier as Organisational and Marketing Innovations (OMIs), innovation studies have instead focussed on Process and Product Innovations (c.f. OECD/Eurostat, 2005; Edquist, 2009; Naido, 2010; Salavou et al., 2004; Battisti and Stoneman, 2010; Schubert, 2009). Review of the literature revealed a dearth of information on the importance of SMEs for economic growth in the developing nations (Cravo et al., 2010). Despite their closeness to their customers, many SMEs are finding it difficult to achieve innovations that have positive impact on the business growth and returns. In order to address these gaps, the research adopted a two-phase sequential mixed methods design to:

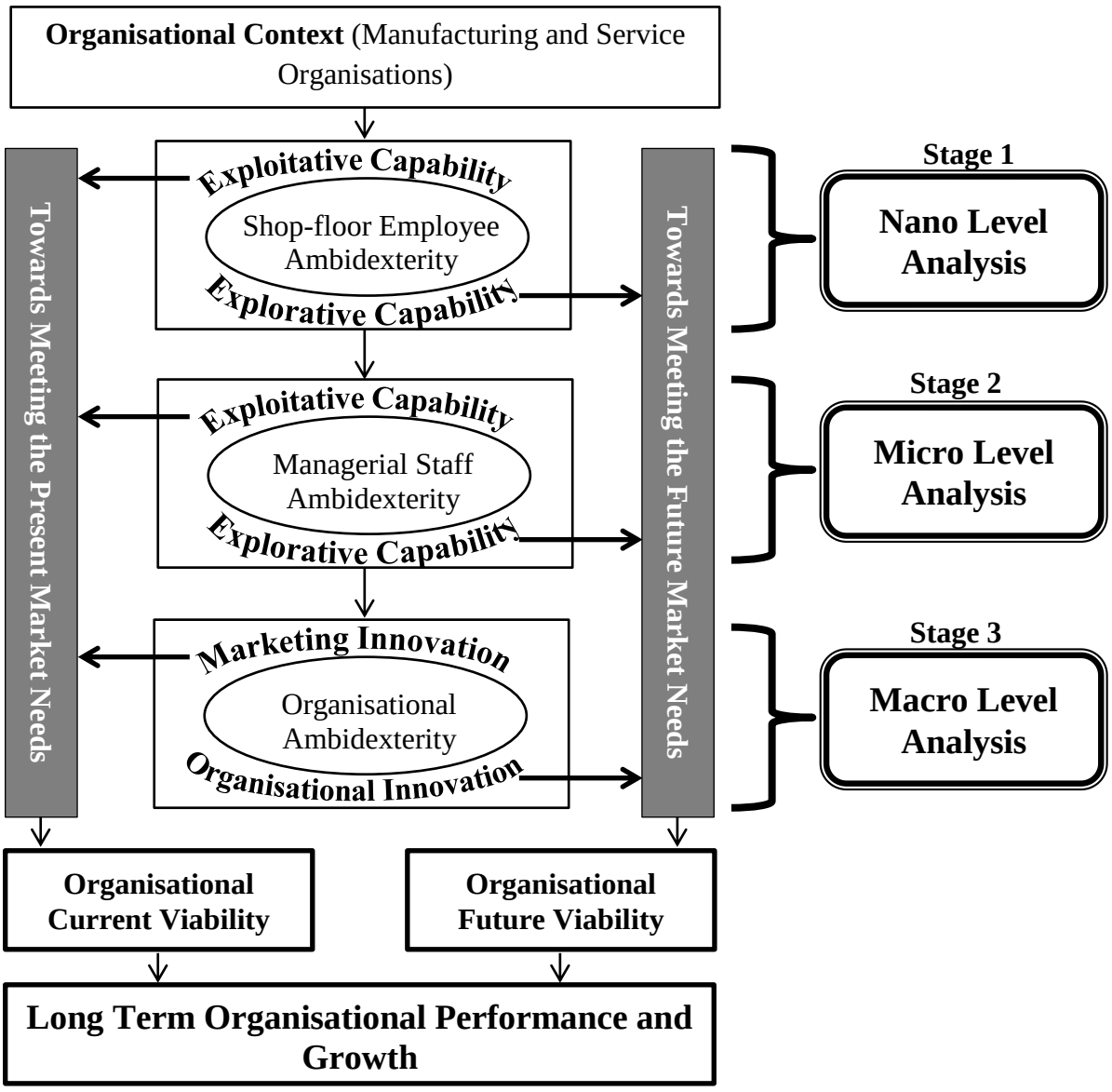
- Understand the relevant antecedents of OMIs capabilities;
- Explore the organisational context for OMIs, Contextual Individual Ambidexterity (CIA), and Organisational Ambidexterity (OA);
- Understand the impact of CIA on OA and OMIs capabilities; and
- Determine how CIA, OA and OMIs capabilities can contribute to sustainable organisational performance.

Figure 8.1 provides a summary of the methodology adopted for each phase of the research and section 8.3 establishes the extent to which the research questions have been addressed by the findings.

**Figure 8.1: Research Methods**




(a) Phase 1: Qualitative Study




(b) Phase 2: Quantitative Study

The first phase involved schedule of in-depth interviews, which provided a clear view of OMIs within the confine of SMEs. The second phase helped to identify the relevance of organisational context to the CIA of the shop-floor employees and the managerial staff; to OA; and to OMIs capabilities through descriptive and inferential statistics.

## 8.3 Addressing the Research Questions

***RQ1: What are the factors promoting Organisational and Marketing Innovations (OMIs) capabilities of SMMSOs in the developing economies?***

Findings from the explorative phase of the research show the significance of Employee Engagement to Organisational Innovation capability, and Customer Engagement to Marketing Innovation capability. Employee Engagement has been defined as the level of emotional and intellectual commitment that employees have towards their organisation, as well as the willingness of the employees to show more effort than is expected of them in order to help their organisation achieve its objectives (Richman, 2006). Thus, engaged employees show high levels of motivation and involvement. Engaged employees understand the goals of their organisations; their personal contributions towards the goals; and the overall steps required to achieve them (Hyuna, 2008). The level of engagement of the employees increases when the organisation encourages employees' participation in its decision making process that, in turn, increases the ability of the organisation to implement new organisational methods in business practices; and that workplace organisation relations improve and better external relations take place. In this study, it has been confirmed through discussion with the managers and the owners of Small and Medium-sized Manufacturing and Service Organisations that: continuous learning culture; employee training and development; effective workplace communication; employee empowerment; and employee participation in organisations, are some of the identified perspectives relevant to Organisational Innovation capability.

Cordial relationships with customers are central to developing Marketing Innovation capability. To implement new marketing methods for products and services successfully, managers of small organisations need to directly engage their customers in the business activities. While they have a strong ability to invent as a result of their closeness to their customers, SMEs need to fully engage their customers in their

business activities in order to improve their ability to commercialise their inventions successfully. It is one thing to know what the customers want; it is another to know how and when they want it. Findings from this research show that successful implementation of new organisational and marketing changes within business practices comes with an increase in: employees' responsibilities and commitment; organisational viability; exploitation of organisational knowledge; and a reduction in the overall cost of doing business, through the constant reduction in the waste associated with business activities.

***RQ2: How does an organisational context (organisational structure and culture) affect the Contextual Individual Ambidexterity (CIA) of the shop floor employees and OMIs capabilities?***

Organisational contexts were assessed using four constructs identified in the literature (section 2.16): Organic Structure (ORGS); Clan Culture (CLANC); Adhocracy Culture (ADHC); and Knowledge Sharing Culture (KSCC). Based on the research findings detailed in chapter 7, the features of a favourable organisational context for Employee Ambidexterity and OMIs can be summarised as follows:

- Decentralised decision making that promotes the delegation of authority in order to control tasks
- Reduced emphasis on formal rules and procedures
- Evidence of open and verbal communication
- Organisational encouragement of employee commitment beyond any technical definition.
- Lateral interactions among employees
- Team work, participation and consensus
- Emphasis on internal maintenance and external positioning with a high degree of flexibility and individuality
- Emphasis on concern for employees and sensitivity to customers' needs
- Emphasis on teamwork, employee empowerment, participation and involvement, and recognition for employees
- Thoughtful risk taking
- Knowledge sharing, trust, mutual respect and openness among the employees

Statistical evidence gained from this research (Chapter 7) shows that these features will encourage employees to contribute, both passively and actively, to the *exploitation* of current market opportunities and the *exploration* of future opportunities. SMEs' implementation of these features will enhance their employees' ability to concurrently contribute to the current and future competitive advantage of their organisation and enable them to search for, and find, better ways of carrying out their individual roles. With respect to OMIs capabilities, the organisational context characterised by these features will facilitate the implementation of a new organisational method in business practices; in workplace organisation; and in external relations. It will also support the implementation of a new marketing method; such as significant changes in product packaging; in product placement; in product promotion or in pricing.

***RQ3: What is the relationship between the CIA of the managerial employees and Organisational Ambidexterity?***

Findings from section 7.2.6 show that activities of ambidextrous managers in an organisation will have an aggregate effect on the organisational ambidexterity. An increase in the ability of the managerial staff to optimally use the organisational resources in meeting both the present and the future needs of the organisation translates to the optimal use of organisational resources to the same end. When managerial employees are able to simultaneously exploit current market opportunities and create future market opportunities for their organisation, the implication of this is that the organisation has sufficient capability to simultaneously exploit existing competitive advantage and explore new ones with equal dexterity towards its sustainable performance and growth.

***RQ4: How does CIA level of the managerial employees affect the Organisational Innovation capability, the Marketing Innovation capability, and the Organisational Performance of SMMSOs in the developing economies?***

With reference to the CIA and OMIs capabilities in Hypothesis 15, the ability of the managerial staff to optimally use the organisational resources in meeting both the present needs and the future needs of the organisation positively relates to Organisational Innovation capability, thus promoting the introduction and implementation of a new organisational method in business practices; in workplace organisation; and in external relations. Also, because ambidextrous managers focus on

getting the best for their organisation from both present and future opportunities, they are able to introduce and implement new marketing methods with significant changes in product packaging; product placement; promotion; and pricing (Hypothesis 16).

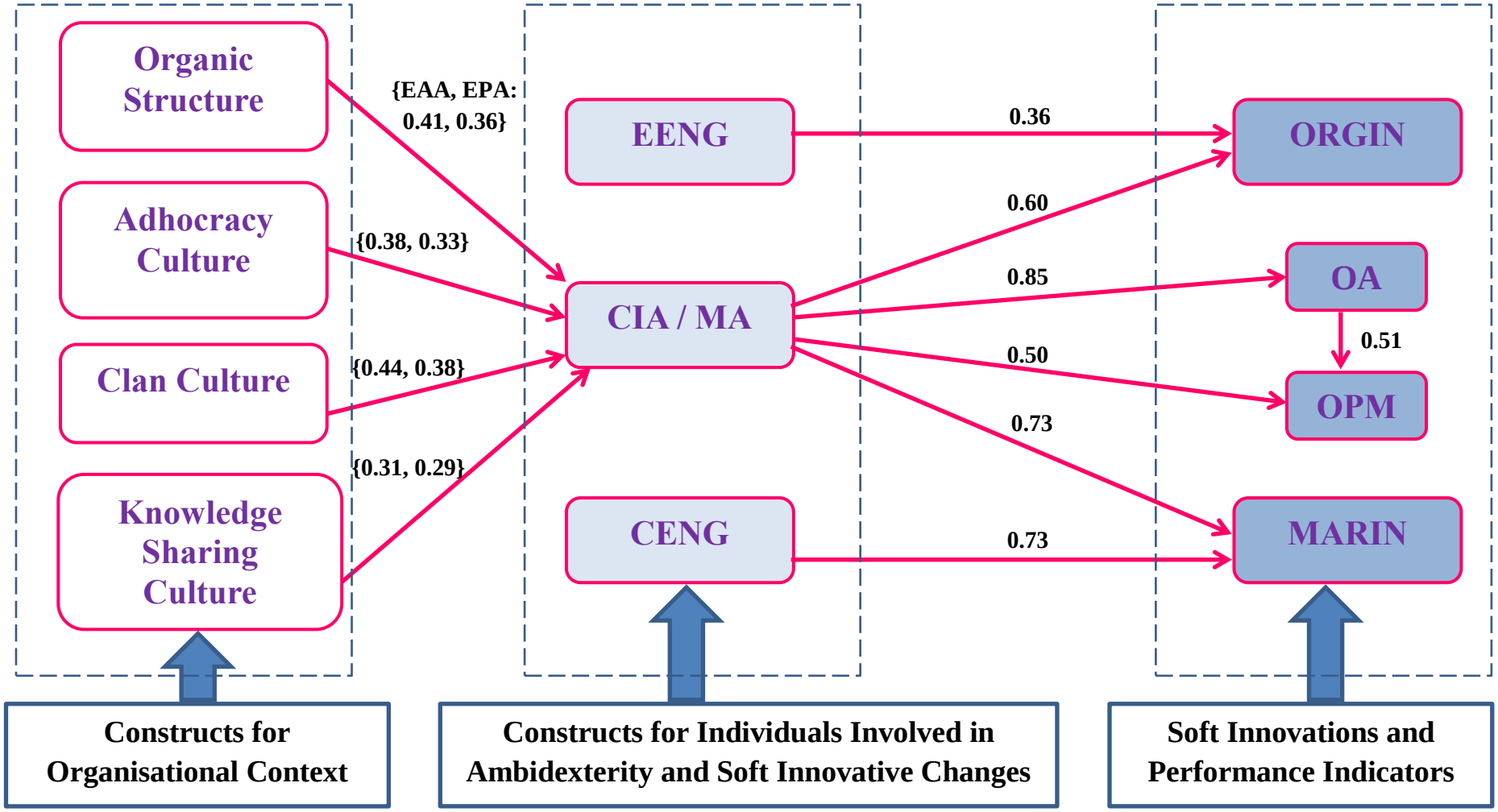
As shown in section 7.27 for CIA and Organisational Performance, ambidextrous managers promote organisational performance. The ability of every individual employee to pursue exploration of new product markets while exploiting current product markets is crucial to the long term survival of the organisation. Exploitative orientations of the managers transform knowledge into commercial ends. The absence of exploitative effort will adversely affect the current organisational performance. Moreover, when the explorative orientations of the employees are missing, this will adversely affect the future organisational performance and its ability for sustainable growth. Meeting the current needs of existing customers (short term organisational performance) requires more of the exploitative than it does the explorative orientation of the employees, while meeting the future needs of the customers (long term organisational performance) requires more of the employees' explorative orientation than it does the exploitative activities.

## 8.4 Research Contributions

This study has revealed and provided support for the significance of OMIs capabilities; individual Employee Ambidexterity; and the required organisational context to sustainable organisational growth. The following section summarises the key contributions of this research to the academic and industrial environments.

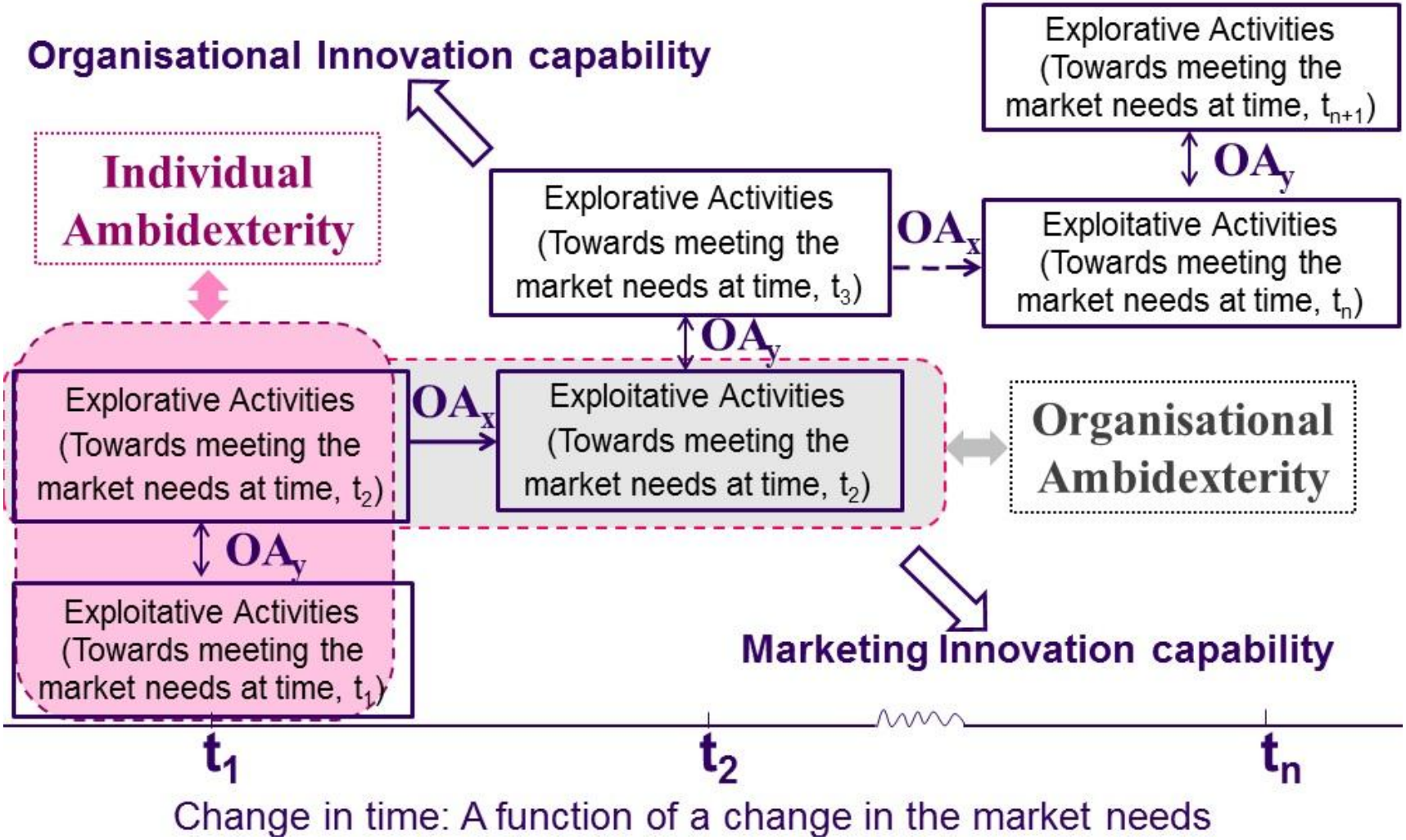
Figure 8.2 summarises the research framework showing the strength of relationships among the research constructs. The framework summarises the impact of the investigated organisational context on individual ambidexterity and how the individuals involved in ambidexterity orientation and soft innovative changes contribute to the overall organisational performance. Figure 8.3 shows the linkage among Contextual Individual Ambidexterity (CIA), Organisational Ambidexterity (OA) and Soft Components of Innovative Changes (OMIs). This relates ambidexterity at the individual level to ambidexterity at the organisational level. It also shows how the explorative and exploitative components of ambidexterity correspond to Organisational Innovation capability and Marketing Innovation capability.

**Figure 8.2: Research Framework Showing Constructs Relationships**




Parameter Estimates are statistically significant (p-value < 0.05, at the 0.001 level, two-tailed)

**Figure 8.3: CIA-OA-OMIs Linkage**



### 8.4.1 Theoretical Implications

This research study has identified four types of innovation in the literature: Product; Process; Organisational; and Marketing innovations. While many of the previous studies on innovation have focused on Process and Product Innovations, Organisational and Marketing Innovations (OMIs) have received limited attention in the literature. While Organisational Ambidexterity (OA) has been noted to promote sustainable organisational growth, existing studies on organisational context for ambidextrous employees are scarce. Most of the existing studies on Ambidexterity at the individual level of analysis have focused on the organisational leadership and on the composition of the top management team. Theoretical and empirical investigation on OA with respect to the composition of the shop floor employees remains unexplored. Thus, this research advances the literature on OA by introducing the notion of multiple levels of analysis in one study (Figure 8.1b): Nano level analysis (CIA of the shop-floor employees); Micro level analysis (CIA of the managerial employees); and Macro level analysis (Ambidexterity at organisational level). The first two levels focus on the individual‘s ability to pursue exploratory and exploitative opportunities simultaneously, while the third level focuses on the overall capability of the organisations to be ambidextrous. This study opens up a new line of enquiry into the theory of OA and the soft components of innovations through exploration of OA and its relationships with OMIs.

Current and extant investigations have shown that SMEs have limited resources. As a result of such limitations, it is often difficult for SMEs to have two different structural separations for explorative and exploitative pursuits. This implies that ambidexterity in SMEs at both individual and organisational levels will be contextual, as shown in section 2.13.1. This research study also addressed “the neglected members” of the organisations in the study of OA; these are field and assembly-line employees occupying non-managerial role. Identification of the organisational context for the CIA of the shop-floor employees and managerial staff in SMEs has aided the development of the theory of ambidexterity. The study has also uncovered the significant impact of individual ambidexterity on the OA. Moreover, it contributes to the understanding of the effect of individual employees’ attributes to their level of ambidexterity. This research has involved the development and implementation of a relatively fast and easy-to-use survey instrument for the future collection of data by

others wishing to further explore Employee Ambidexterity and OMIs in similar and alternative contexts. The theoretical implications of the study can be summarised as follows:

- This study identifies the Organisational Context for EA, OA and OMIs.
- This study focuses on the soft components of Innovation and reveals their significance to sustainable organisational growth.
- The study advanced literature on the study of OA by combining individual level with organisational level of analysis.
- Established and validated relationships between EA, OA and OMIs.
- This research identifies frameworks (Figure 8.2 and Figure 8.3) that promote effective innovation and sustainable organisational performance through shop floor employees' contributions to OA and OMIs in SMEs.

### 8.4.2 Policy and Industrial Implications

Various austerity measures in various countries across the globe are indications that Governments in these countries do not have enough resources to meet their own obligations. It is therefore important for small organisations to start looking inward and focussing on maximising their internal capabilities towards their continuous survival. The ability of an organisation to exploit its current opportunities by focusing on current competitive advantage and to explore new opportunities for future competitive advantage (OA), has been noted as the necessary attribute for firms to remain competitive and adaptive to continuous change in the business environment (O'Reilly and Tushman, 2011). The ambidextrous orientations of individual employees have been shown to have an aggregate effect on the organisational ambidexterity (Raisch et al., 2009). The research findings have also provided support for a required organisational context that favours individual ambidexterity. Moreover, findings from this study have shown that OMIs are necessary prerequisites to optimally utilise and deploy process and product innovations.

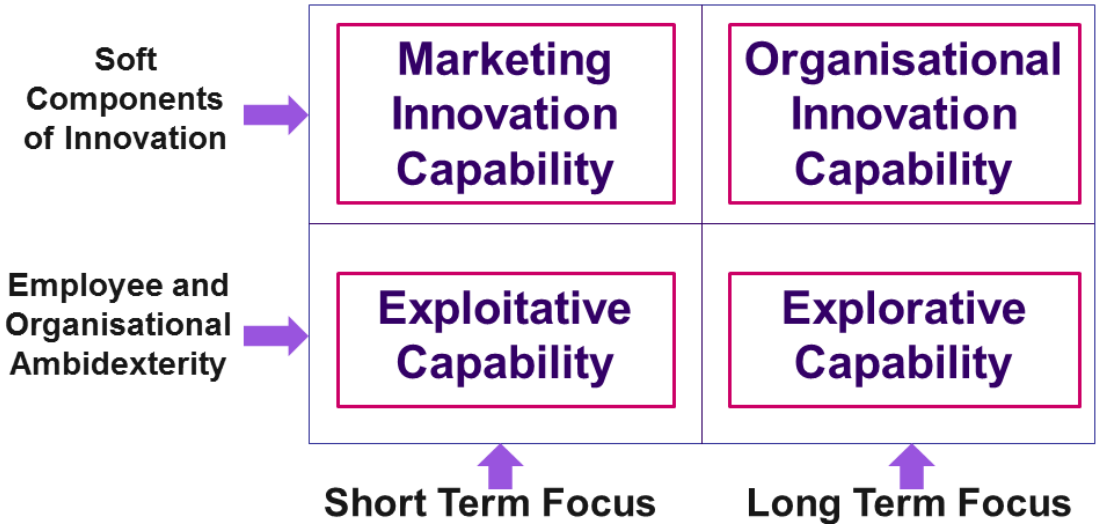
OMIs are needed for every organisation to achieve effective innovations; these are innovations with positive impact on business returns and organisational growth. This research has identified the organisational context for Employee Ambidexterity and a framework to improve the contributions of the employees to OA; OMIs capabilities; and organisational survival. This will optimise the internal capabilities of small and

medium-sized organisations towards promoting their sustainable growth. The current study will assist in promoting viable manufacturing and services that small and medium-sized organisations need to offset current job losses in the public sector. Finally, this research has developed, implemented and tested a refined and condensed survey tool to minimise the time for administering the questionnaire in the future. This has ensured the practical application of findings to current case organisations and will more easily facilitate future studies. The industrial implications are summarised as follows:

- Optimising the internal capabilities of SMEs towards their sustainable growth and survival.
- Research will promote viable SMEs needed to offset the prevalent public sector job losses.
- This study provides empirical evidence on how SMEs could simultaneously exploit their current opportunities and also explore new ones with equal dexterity.
- Implementing the research findings will promote long term organisational performance needed in SMEs in developing economies.

Sustainable organisational performance requires both short and long term focus as shown in Figure 8.4

**Figure 8.4: Relating Soft Innovations and Ambidexterity to Short and Long Term Organisational Focus**



This confirms the significance of the softs components of innovation, employee and organisational ambidexterity to long term organisational survival. While Marketing Innovation capability and Exploitative orientation of ambidexterity of the organisations focus on the current competitive advantage, Organisational Innovation capability and Explorative orientation focus on the future competitive advantage. Outcomes of this research have been eye-openers for the case organisations on how to optimally utilise their resources (people, materials, knowledge, technology and other assets) to achieve sustainable growth and long term success.

### 8.5 Research Limitation and Recommendations for Future Research

The empirical evidence obtained from this study shows the required organisational context for developing Employee Ambidexterity; the relationship between Employee Ambidexterity and organisational ambidexterity; and the significance of Organisational and Marketing Innovations. However, it would be interesting to extend the findings to develop practical models that focus on case organisations. This may involve the application of action research where the researchers are actively participating in the design of the specified organisational context.

As this study is limited to SMEs, future research is needed to examine whether similar contexts are applicable in developing Employee Ambidexterity at the shop-floor and the managerial staff levels in large organisations, and how ambidexterity at this level might contribute to the overall Organisational Ambidexterity. It would also be interesting to extend the focus to other countries to determine if the findings are consistent with results from other countries. This will facilitate cross-country analysis and comparison.

Organisational performance was assessed by subjective measures in this study because many organisations are reluctant to disclose exact performance records and share objective performance data. Although such measures are widely used in empirical research (Gunday et al., 2011; Khazanchi et al., 1989; Boyer et al., 1997), they are known to be respondent-biased. The outcomes of Employee Ambidexterity and OMIs capabilities could, therefore, also be evaluated by means of objective measures of organisational performance. This is likely to be possible when the researchers are active members of the case organisations. Also, the overall economic

benefits of such a study would have the tendency to encourage participation and increase willingness of the case organisations to release objective performance data.

## 8.6 Concluding Remark

This study began with identifying the significance of employee ambidexterity and the soft components of innovation process in achieving effective innovations and sustainable organisational growth in small and medium-sized organisations. The study has shown the required organisational context for Employee Ambidexterity and its aggregate effects on ambidexterity at organisational level, and also on Organisational and Marketing Innovations capabilities of small and medium-sized organisations. Through a two-phase sequential mixed methods design, the study has addressed the research questions and the identified gaps in the literature. It has also identified the context for Employee Ambidexterity and proposed a framework to improve ability of the small and medium-sized organisations in maintaining a balance between: (1) getting the best from their current or present market opportunities, and (2) being well-prepared for incoming future opportunities with their limited resources.

## References

ABBING, E.R., 2010. Brand-Driven Innovation: Strategies for Development and Design. Lausanne: AVA Publishing SA.

ACHARYA, R.C. and KELLER, W., 2009. Technology Transfer through Imports; Transfert De Technologie à Travers Les Importations. Canadian Journal of Economics/Revue Canadienne d'Économique, vol. 42, no. 4, pp. 1411-1448 ISSN 1540-5982. DOI 10.1111/j.1540-5982.2009.01550.x.

ADEKUNLE, P.A. and TELLA, A., 2008. Nigerian SMEs Participation in Electronic Economy: Problems and the Way Forward. Journal of Internet Banking and Commerce, vol. 12, no. 3, pp. 1-13.

AGWU, A.E., DIMELU, M.U. and MADUKWE, M.C., 2008. Innovation System Approach to Agricultural Development: Policy Implications for Agricultural Extension Delivery in Nigeria. African Journal of Biotechnology, vol. 7, no. 11, pp. 1604-1611.

AJAYI, J. and ADESINA, S., 2011. Experts Highlight Problems Militating Against SMEs in Nigeria. Lagos: Nigerian Tribune 16 February 2011.

AHMED, P.K., 1998. Culture and Climate for Innovation. European Journal of Innovation Management, vol. 1, no. 1, pp. 30-43.

AHN, M.J., ZWIKAEL, O. and BEDNAREK, R., 2010. Technological Invention to Product Innovation: A Project Management Approach. International Journal of Project Management, vol. 28, no. 6, pp. 559-568 ISSN 0263-7863. DOI 10.1016/j.ijproman.2009.11.001.

AKO, R., 2012. Resource Control in the Niger Delta: Conceptual Issues and Legal Realities. e-International Relations. May 25, 2012, Available from: http://www.e-ir.info/2012/05/25/resource-control-in-the-niger-delta-conceptual-issues-and-legal-realities/.

AMABILE, T.M., et al, 1996. Assessing the Work Environment for Creativity. Academy of Management Journal, 39, vol. 5, no. 1154, pp. 1184.

AMARA, N., LANDRY, R., BECHEIKH, N. and OUIMET, M., 2008. Learning and Novelty of Innovation in Established Manufacturing SMEs. Technovation, vol. 28, no. 7, pp. 450-463 ISSN 0166-4972. DOI 10.1016/j.technovation.2008.02.001.

ANDERSON, J.C. and GERBING, D.W., 1988. Structural Equation Modelling in Practice: A Review and Recommended Two-Step Approach. Psychological Bulletin, vol. 103, no. 3, pp. 411-423.

ANDRIOPOULUS, C. and DAWSON, P., 2009. Managing Change, Creativity and Innovation. London: SAGE Publications Ltd.

ANDRIOPOULOS, C. and LEWIS, M.W., 2009. Exploitation-Exploration Tensions and Organizational Ambidexterity: Managing Paradoxes of Innovation. Organization Science, JUL-AUG, vol. 20, no. 4, pp. 696-717 ISSN 1047-7039. DOI 10.1287/orsc.1080.0406.

ANDRIOPOULUS, C. and DAWSON, P., 2009. Managing Change, Creativity and Innovation. London: SAGE Publications Ltd.

APULU, I. and LATHAM, A., 2010. Benefits of Information and Communication Technology in Small and Medium Sized Enterprises: A Case Study of a Nigerian SMEs. UK Academy for Information Systems Conference Proceedings 2010, Paper 7, 3-23-2010, pp. 1-20.

ARDIC, O.P., MYLENKO, N. and SALTANE, V., 2011. Small and Medium Enterprises: A Cross-Country Analysis with a New Data Set. The World Bank Policy Research Working Paper 5538, vol. 1, no. 1, pp. 1-30.

AREMU, M.A. and ADEYEMI, S.L., 2011. Small and Medium Scale Enterprises as A Survival Strategy for Employment Generation in Nigeria. Journal of Sustainable Development, vol. 4, no. 1, pp. 1-7.

ARINAITWE, S.K., 2006. Factors Constraining the Growth and Survival of Small Scale Businesses. A Developing Countries Analysis. Journal of American Academy of Business, Cambridge, vol. 8, no. 2, pp. 167-179.

ARMSTRONG, J.S. and OVERTON, T.S., 1977. Estimating Nonresponse Bias in Mail Surveys. Journal of Marketing Research, vol. 14, no. August, pp. 396-402.

ATUAHENE-GIMA, K., 2005. Resolving the Capability: Rigidity Paradox in New Product Innovation. Journal of Marketing, American Marketing Association, vol. 69, no. 4, pp. 61-83.

AUGUSTO, M. and COELHO, F., 2009. Market Orientation and New-to-the-World Products: Exploring the Moderating Effects of Innovativeness, Competitive Strength and Environmental Forces. Industrial Marketing Management, vol. 38, no. 1, pp. 94-108.

AXTELL, C.M., et al, 2000. Shop-floor Innovation: Facilitating the Suggestion and Implementation of Ideas. Journal of Occupational and Organisational Psychology, vol. 73, pp. 265-285.

AYYAGARI, M., BECK, T. and DEMIRGUC-KUNT, A., 2007. Small and Medium Enterprises Across the Globe, Small Business Economics, vol. 29, no. 4, pp. 415-434.

BAGOZZI, R.P. and YI, Y., 1988. On the Evaluation of Structural Equation Models. Journal of the Academy of Marketing Science, vol. 16, no. 1, pp. 74-79.

BASIL, A.N.O., 2005. Small and Medium Enterprises (SMEs) in Nigeria: Problems and Prospects, Ph.D. Thesis. St. Clements University.

BATTISTI, G. and STONEMAN, P., 2010. How Innovative are UK Firms? Evidence from the Fourth UK Community Innovation Survey on Synergies between Technological and Organizational Innovations. British Journal of Management, vol. 21, no. 1, pp. 187-206 ISSN 1467-8551. DOI 10.1111/j.1467-8551.2009.00629.x.

BAUMGARTNER, H. and HOMBURG, C., 1996. Applications of Structural Equation Modelling in Marketing and Consumer Research: A Review. International Journal of Research in Marketing, vol. 13, no. 2, pp. 139-161.

BECK, T., DEMIRGUC-KUNT, A. and MARTINEZ PERIA, M.S., 2008. Bank Financing for SMEs Around the World. The World Bank Research Working Papers 4785, vol. 1, no. 1, pp. 1-43.

BECKMAN, C.M., 2006. The Influence of Founding Team Company Affliations on Firm Behaviour. Academy of Management Journal, vol. 49, no. 4, pp. 741-758.

BENNER, M. and TUSHMAN, M., 2003. Exploitation, Exploration, and Process Management: The Productivity Dilemma Revisited. Academy of Management Review, APR, vol. 28, no. 2, pp. 238-256 ISSN 0363-7425.

BERRIO, A.A., 2003. An Organizational Culture Assessment using the Competing Values Framework: A Profile of Ohio State University Extension. Journal of Extension, vol. 41, no. 2.

BESSANT, J.R. and TIDD, J., 2007. Innovation and Entrepreneurship. 1st ed. Chichester: John Wiley & Sons.

BI, X. and YU, C., 2008. Absorptive Capacity of Information Technology and its Conceptual Model. Tsinghua Science & Technology, 6, vol. 13, no. 3, pp. 337-343 ISSN 1007-0214. DOI 10.1016/S1007-0214(08)70054-3.

BIERLY, P. and CHAKRABARTI, A., 1996. Generic Knowledge Strategies in the U.S Pharmaceutical Industry. Strategic Management Journal, vol. 17, no. 10, pp. 1-13.

BLALOCK, G. and GERTLER, P.J., 2008. Welfare Gains from Foreign Direct Investment through Technology Transfer to Local Suppliers. Journal of International Economics, 3, vol. 74, no. 2, pp. 402-421 ISSN 0022-1996. DOI 10.1016/j.jinteco.2007.05.011.

BLESS, C., HIGSON-SMITH, C. and KAGEE, A., 2000. Fundamentals of Social Research Methods: An African Perspective. 3rd ed. Cape Town: Juta and Company Limited.

BOGDAN, R.C. and BIKLEN, S.K., 2007. Qualitative Research for Education: An Introduction to Theory and Methods. fifth ed. Boston: Allyn and Bacon.

BOLLEN, K.A., 1989. Structural Equations with Latent Variables. New York: John Wiley and Sons.

BOWDEN, J.L., 2009. The Process of Customer Engagement: A Conceptual Framework. The Journal of Marketing Theory and Practice, vol. 17, no. 1, pp. 63-74.

BOYER, K.K., LEONG, G.K., WARD, P.T. and KRAJEWSKI, L.J., 1997. Unlocking the Potential of Advanced Manufacturing Technologies. Journal of Operations Management, 11, vol. 15, no. 4, pp. 331-347 ISSN 0272-6963. DOI 10.1016/S0272-6963(97)00009-0.

BRACE, N., KEMP, R. and SNELGAR, R., 2006. SPSS for Psychologists: A Guide to Data Analysis using SPSS for Windows (Versions 12 and 13). Third ed. New York: Palgrave Macmillan.

BROWNE, M.W. and CUDECK, R., 1993. Alternative Ways of Assessing Model Fit. In: K.A. BOLLEN and J.S. LONG eds., Testing Structural Equations Models Newbury Park CA: Sage Publication. Alternative Ways of Assessing Model Fit, pp. 445-455.

BRYMAN, A. and BELL, E., 2007. Business Research Methods. Second ed. Oxford: Oxford University Press.

BULMER, M., 2008. The Ethics of Social Research. In: N. GILBERT ed., Researching Social Life, Third ed. Los Angeles: SAGE Publications. The Ethics of Social Research, pp. 145-161 ISBN 978-1-41294662-9.

BURNS, T. and STALKER, G.M., 1961. The Management of Innovation. London: Tavistock.

BYRNE, B.M., 2001. Structural Equation Modelling with AMOS: Basic Concepts, Applications, and Programming. New Jersey: Lawrence Erlbaum Associates, Inc.

CALANTONE, R.J., CAVUSGIL, S.T. and ZHAO, Y., 2002. Learning Orientation, Firm Innovation Capability, and Firm Performance. Industrial Marketing Management, 9, vol. 31, no. 6, pp. 515-524 ISSN 0019-8501. DOI: 10.1016/S0019-8501(01)00203-6.

CALVERT, J., IBARRA, C., PATEL, P. and PAVITT, K., 1996. Innovation Outputs in European Industry. Luxembourg: Presented at the EU Conference on Innovation Measurement and Policies.

CAMERON, K.S. and QUINN, R.E., 2006. Diagnosing and Changing Organisational Culture. Revised Edition ed. San Francisco: Jossey-Bass A Wiley Imprint.

CAMERON, K.S. and QUINN, R.E., 1999. Diagnosing and Changing Organizational Culture. Reading, MA: Addison Wesley.

CAMISÓN, C. and VILLAR-LÓPEZ, A., 2012. On how Firms Located in an Industrial District Profit from Knowledge Spillovers: Adoption of an Organic Structure and Innovation Capabilities. British Journal of Management, vol. 23, no. 3, pp. 361-382 ISSN 1467-8551. DOI 10.1111/j.1467-8551.2011.00745.x.

CAO, Q., GEDAJLOVIC, E. and ZHANG, H., 2009. Unpacking Organizational Ambidexterity: Dimensions, Contingencies, and Synergistic Effects. Organization Science, Jul. - Aug., vol. 20, no. 4, Organizational Ambidexterity, pp. pp. 781-796 ISSN 10477039.

CBN., 2006. Central Bank of Nigeria, Rates Archives. Central Bank of Nigeria. Available from: http://www.cenbank.org/rates/ExchangeArchives.asp.

CHANDER, G.N., KELLER, C. and LYON, D.W., 2000. Unravelling the Determinants and Consequences of an Innovation-Supportive Organizational Culture. Entrepreneurship: Theory & Practice, Fall2000, vol. 25, no. 1, pp. 59 ISSN 10422587.

CHENG, W., HAILIN, L. and HONGMING, X., 2008. Does Knowledge Sharing Mediate the Relationship between Trust and Firm Performance?. IEEE 2008 International Symposiums on Information Processing (ISIP), pp. 453.

CHENG, C., LAI, M. and WU, W., 2010. Exploring the Impact of Innovation Strategy on R&D Employees' Job Satisfaction: A Mathematical Model and Empirical Research. Technovation, 0, vol. 30, no. 7–8, pp. 459-470 ISSN 0166-4972. DOI 10.1016/j.technovation.2010.03.006.

CHI, C.G. and GURSOY, D., 2009. Employee Satisfaction, Customer Satisfaction, and Financial Performance: An Empirical Examination. International Journal of Hospitality Management, 6, vol. 28, no. 2, pp. 245-253 ISSN 0278-4319. DOI 10.1016/j.ijhm.2008.08.003.

CHU, K.F., 2003. An Organizational Culture and the Empowerment for Change in SMEs in the Hong Kong Manufacturing Industry. Journal of Materials Processing Technology, 8/20, vol. 139, no. 1-3, pp. 505-509 ISSN 0924-0136. DOI 10.1016/S0924-0136(03)00527-2.

CHURCHILL, G.A., 1999. Marketing Research Methodological Foundations. Fort Worth: Dryden Press.

COHEN, J.P., COHEN, P., WEST, S.G. and AIKEN, L.S., 2003. Applied Multiple Regression / Correlation Analysis for the Behavioural Sciences. Third ed. Mahwah NJ: Lawrence Erlbaum Associates.

COHEN, J. and COHEN, P., 2003. Applied Multiple regression/correlation Analysis for the Behavioural Sciences. Third ed. Mahwah, N.J.: L. Erlbaum Associates.

COHEN, W.M. and LEVINTHAL, D.A., 1990. Absorptive Capacity: A New Perspective on Learning and Innovation. Administrative Science Quarterly, Mar., vol. 35, no. 1, Special Issue: Technology, Organizations, and Innovation, pp. pp. 128-152 ISSN 00018392.

CONWAY, S. and STEWARD, F., 2009. Managing and Shaping Innovation. Oxford: Oxford University Press.

CORBIN, J. and STRAUSS, A., 2008. Basics of Qualitative Research, Techniques Abd Procedures for Developing Grounded Theory. Los Angeles: SAGE Publications ISBN 978-1-4129-0644-9.

COSH, A., FU, X. and HUGHES, A., 2005. Management Characteristics, Collaboration and Innovative Efficiency: Evidence from UK Survey Data. Working Paper ed. Cambridge: Centre for Business Research, University of Cambridge.

CRAVO, T.A., GOURLAY, A. and BECKER, B., 2010. SMEs and Regional Economic Growth in Brazil. Working Paper ed. Loughborough University, Loughborough: .

CRESWELL, J.W., 2011. Planning, Conducting, and Evaluating Quantitative and Qualitative Research, Educational Research. 4th ed. Boston: Pearson Education, Inc.

CRESWELL, J.W., 2009. Research Design: Qualitative, Quantitative, and Mixed Methods Approaches. 3rd ed. Los Angeles: SAGE Publications, Inc. ISBN 978-1-4129-6557-6.

CRESWELL, J.W., 2008. Planning, Conducting, and Evaluating Quantitative and Qualitative Research, Educational Research. 3rd ed. New Jersey: Pearson Education, Inc.

CRESWELL, J.W., FETTERS, M.D. and IVANKOVA, N.V., 2004. Designing a Mixed Methods Study in Primary Care. Annals of Family Medicine, vol. 2, no. 1, pp. 7-12.

CRESWELL, J.W. and PLANO-CLARK, V.L., 2011. Designing and Conducting Mixed Methods Research. 2nd ed. Los Angeles: SAGE Publications, Inc.

CRESWELL, J.W. and PLANO-CLARK, V.L., 2007. Designing and Conducting Mixed Methods Research. Los Angeles: SAGE Publications, Inc.

DAFT, R.L., 1982. Bureaucratic versus non-bureaucratic structure and the process of innovation and change. In: S.B. BACHARACH ed., Research in the Sociology of Organizations, Vol. 1,Greenwich, CT: JAI Press. Bureaucratic Versus Non-Bureaucratic Structure and the Process of Innovation and Change, pp. 129-166.

DAFT, R.L., 1978. A Dual-Core Model of Organisational Innovation. Academy of Management Journal, vol. 21, no. 2, pp. 193-210.

DAMANPOUR, F., 1991. Organisational Innovation: A Meta-Analysis of Effects of Determinants and Moderators. Academy of Management Journal, vol. 34, no. 3, pp. 555-590.

DAMANPOUR, F. and GOPALAKRISHNAN, S., 1998. Theories of Organizational Structure and Innovation Adoption: The Role of Environmental Change. Journal of Engineering and Technology Management, 3, vol. 15, no. 1, pp. 1-24 ISSN 0923-4748. DOI 10.1016/S0923-4748(97)00029-5.

DANIEL, W., SCHOTT, W.B., ATKINS, F.C. and DAVIS, A., 1982. An Adjustment for Nonresponse in Sample Surveys. Educational and Psychological Measurement, vol. 42, pp. 57-67.

Dash, N. K., 2005. Selection of the Research Paradigm and Methodology, 2005. Manchester: Online Research Methods Resource for Teachers and Trainers, Manchester Metropolitan University [viewed 4 January 2012]. Available from: http://www.celt.mmu.ac.uk/researchmethods/Modules/Selection_of_methodology/index.php.

DAVIES, H.T.O., et al, 2007. Exploring the Relationship between Senior Management Team Culture and Hospital Performance. Medical Care Research and Review, vol. 64, no. 1, pp. 46-65.

DAWAR, N. and CHATTOPADHYAY, A., 2002. Rethinking Marketing Programs for Emerging Markets. Long Range Planning, vol. 35, pp. 457-474.

DE MEL, S., MCKENZIE, D. and WOODRUFF , C., 2009. Innovative Firms Or Innovative Owners? Determinants of Innovation in Micro, Small, and Medium Enterprises, IZA Discussion Paper no. 3962. Germany: Institute for the Study of Labour (IZA).

DE VAUS, D., 2002. Surveys in Social Research. Fifth ed. London: Routledge.

DEVELLIS, R.F., 1991. Scale Development: Theory and Application. Newbury Park, CA: SAGE.

DIBRELL, C., DAVIS, P.S. and CRAIG, J., 2008. Fuelling Innovation through Information Technology in SMEs*. Journal of Small Business Management, vol. 46, no. 2, pp. 203-218 ISSN - 1540-627X. DOI - 10.1111/j.1540-627X.2008.00240.x.

DIETRICH, A., 2010. Explaining Loan Rate Differentials between Small and Large Companies: Evidence from Switzerland. Small Business Economics, Springer Netherlands, vol. 2010, no. February, pp. 1-14.

DTI., 2006. Department of Trade and Industry Occasional Paper NO. 6, Innovation in the UK: Indicators and Insights. England: Department of Trade and Industry.

DTI., 2005. Integrated Strategy on the Promotion of Entrepreneurship and Small Enterprises, 2005 Cabinet Approval, the Department of Trade and Industry, Republic of South Africa. Pretoria: the Department of Trade and Industry.

EDQUIST, C., 2009. Systems of Innovation: Perspectives and Challenges. In: J. FAGERBERG, D.C. MOWERY and R.R. NELSON eds., the Oxford Handbook of Innovation, New York: Oxford University Press Inc., Oxford Handbooks Online: Sep-09, DOI: 10.1093/oxfordhb/9780199286805.001.0001, pp. 1-42.

EGBETOKUN, A.A., SIYANBOLA, W.O. and ADENIYI, A.A., 2009. Learning to Innovate in Nigeria's Cable and Wire Manufacturing Subsector: Inferences from a Firm-Level Case Study. International Journal of Learning and Intellectual Capital, vol. 7, no. 1, pp. 55-74 DOI doi:10.1504/IJLIC.2010.029534.

EGBETOKUN, A.A., SIYANBOLA, W.O., ADENIYI, A. and IREFIN, I., 2008. Innovation in Nigerian SMEs: Types and Impact. Munich: Munich Personal RePEc Archive (MPRA).

EGBETOKUN, A.A., SIYANBOLA, W.O. and OLAMADE, O., 2009. The Types and Intensity of Innovation in Developing-Country SMEs: Evidences from a Nigerian Sub-Sectorial Study. Munich: Munich Personal RePEc Archive (MPRA).

EL-HOMSI, A. and SLUTSKY, J., 2010. Corporate Sigma: Optimizing the Health of Your Company with Systems Thinking. New York: Taylor & Francis Group.

EU Commission, 2003. The European Union Commission Recommendation of 6 may 2003 Concerning the Definition of Micro, Small and Medium-Sized Enterprises. Official Journal of the European Union, vol. L 124, no. 36, pp. 1-6.

FERRARI, B. and GOETHALS, J., 2010. The Art of Innovation. McKinsey Quarterly, Business Source Complete, vol. 2010, no. 3, pp. 98-104.

FIELDING, N. and THOMAS, H., 2008. Qualitative Interviewing. In: N. GILBERT ed., Researching Social Life, Third ed. Los Angeles: SAGE Publications. Qualitative Interviewing, pp. 245-265 ISBN 978-1-41294662-9.

FINK, A., 2003. How to Sample in Surveys: The Survey Kit 2. Second ed. Thousand Oaks: SAGE Publications, Inc.

FLOYD, S.W. and LANE, P.J., 2000. Strategizing Throughout the Organization: Managing Role Conflict in Strategic Renewal. Academy of Management Review, vol. 25, no. 1, pp. 154-177.

FORNELL, C. and LARCKER, D.F., 1981. Structural Equation Models with Unobservable Variables and Measurement Error: Algebra and Statistics. Journal of Marketing Research, vol. 18, no. 3, pp. 362-368.

FORZA, C., 2002. Survey Research in Operations Management: A Process-Based Perspective. International Journal of Operations and Production Management, vol. 22, no. 2, pp. 152-194.

GANS, J.S. and STERN, S., 2003. The Product Market and the Market for "Ideas": Commercialization Strategies for Technology Entrepreneurs. Research Policy, vol. 32, no. 2 SPEC., pp. 333-350 SCOPUS.

GASKIN, J., 2012a. Confirmatory Factor Analysis Available from: http://statwiki.kolobkreations.com.

GASKIN, J., 2012b. Introduction to CFA, Stats Tools Package Available from: http://statwiki.kolobkreations.com.

GAYNOR, G.H., 2002. Innovation by Design: What it Takes to Keep Your Company on the Cutting Edge. New York: AMACOM, A division of American Management Association.

GERBING, D.W. and ANDERSON, J.C., 1988. An Updated Paradigm for Scale Development Incorporating Unidimensionality and its Assessment. Journal of Marketing Research, vol. 25, pp. 186-192.

GIBBS, G.R., 2007. Analysing Qualitative Data. In: U. FLICK ed., The Sage Qualitative Research Kit London: Sage.

GIBSON, C.B. and BIRKINSHAW, J., 2004. The Antecedents, Consequences, and Mediating Role of Organizational Ambidexterity. The Academy of Management Journal, Apr., vol. 47, no. 2, pp. pp. 209-226 ISSN 00014273.

GILBERT, C.G., 2005. Unbundling the Structure of Inertia: Resource Versus Routine Rigidity. The Academy of Management Journal, Oct., vol. 48, no. 5, pp. pp. 741-763 ISSN 00014273.

GOEDHUYS, M. and VEUGELERS, R., 2012. Innovation Strategies, Process and Product Innovations and Growth: Firm-Level Evidence from Brazil. Structural Change and Economic Dynamics, 12, vol. 23, no. 4, pp. 516-529 ISSN 0954-349X. DOI 10.1016/j.strueco.2011.01.004.

GOLD, M.S. and BENTLER, P.M., 2000. Treatments of Missing Data: A Monte Carlo Comparison of RBHDI, Iterative Stochastic Regression Imputation, and Expectation-Maximization. Structural Equation Modelling: A Multidisciplinary Journal, vol. 7, no. 3, pp. 319-355.

GREEN, N., 2008. Formulating and Refining a Research Question. In: N. GILBERT ed., Researching Social Life Third ed. Los Angeles: SAGE Publications. Formulating and Refining a Research Question, pp. 43-62 ISBN 978-1-41294662-9.

GUNDAY, G., ULUSOY, G., KILIC, K. and ALPKAN, L., 2011. Effects of Innovation Types on Firm Performance. International Journal of Production Economics, 10, vol. 133, no. 2, pp. 662-676 ISSN 0925-5273. DOI 10.1016/j.ijpe.2011.05.014

GUPTA, A.K., SMITH, K.G. and SHALLEY, C.E., 2006. 'the Interplay between Exploration and Exploitation' , Academy of Management Journal. Academy of Management Journal, vol. 49, no. 4, pp. 693-706.

HAIR, J.F., BLACK, W.C., BABIN, B.J. and ANDERSON, R.E., 2010. Multivariate Data Analysis: A Global Perspective. Seventh ed. Upper Saddle River Boston: Pearson-Prentice-Hall.

HAIR, J.F., et al., 2006. Multivariate Data Analysis. Sixth ed. Upper Saddle River NJ: Pearson-Prentice-Hall.

HANSEN, M.T. and BIRKINSHAW, J., 2007. The Innovation Value Chain. Harvard Business Review, vol. June, pp. 121-130.

HARRINGTON, S.J. and GUIMARAES, T., 2005. Corporate Culture, Absorptive Capacity and IT Success. Information and Organization, 1, vol. 15, no. 1, pp. 39-63 ISSN 1471-7727. DOI 10.1016/j.infoandorg.2004.10.002.

HATUM, A. and PETTIGREW, A.M., 2006. Determinants of Organizational Flexibility: A Study in an Emerging Economy. British Journal of Management, vol. 17, no. 2, pp. 115-137 ISSN 1467-8551. DOI 10.1111/j.1467-8551.2005.00469.x.

HE, Q., 2009. KNOWLEDGE TRANSFER WITHIN SUPPLY CHAIN PARTNERSHIPS: An Empirical Study of A Chinese Steel Producer. PhD ed. London: Middlesex University.

HE, Z. and WONG, P., 2004. Exploration Vs. Exploitation: An Empirical Test of the Ambidexterity Hypothesis. Organization Science, Jul, vol. 15, no. 4, pp. 481-494 ISSN 10477039. DOI 10.1287/orsc.1040.0078.

HOANG, D.T., IGEL, B. and LAOSIRIHONGTHONG, T., 2006. The Impact of Total Quality Management on Innovation, Findings from a Developing Country. International Journal of Quality and Reliability Management, vol. 23, no. 6, pp. 1092-1117 DOI 10.1108/02656710610704230.

HOFFMAN, K., PAREJO, M., BESSANT, J. and PERREN, L., 1998. Small Firms, R&D, Technology and Innovation in the UK: A Literature Review. Technovation, vol. 18, no. 1, pp. 39-55 ISSN 0166-4972. DOI 10.1016/S0166-4972(97)00102-8.

HOFSTEDE, G., 2001. Culture's Consequences: Comparing Values, Behaviours, Institutions, and Organizations across Nations. Second ed. Thousand Oaks CA: Sage Publications.

HOFSTEDE, G., HOFSTEDE, G.J. and MINKOV, M., 2010. Cultures and Organizations: Software of the Mind. Intercultural Cooperation and its Importance for Survival, Revised and Expanded. Third ed. McGraw-Hill.

HOQ, M.Z. and N.C. HA. Innovativeness: Its Antecedents and Relationship to SME Business Performance, TOJIB, D., ed. Sustainable Management and Marketing Conference, 2009.

HUBERMAN, A.M. and MILES, M.B., 2002. The Qualitative Researcher's Companion. Thousands Oaks: Sage Publications.

HURLEY, R.F. and HULT, T.M., 1998. Innovation, Market Orientation, and Organisational Learning: An Integration and Empirical Examination. Journal of Marketing, vol. 62, no. 3, pp. 42-54.

HYUNA, C., 2008. Managing Talent through Employee Engagement. SERI Quarterly, vol. 1, no. 2, pp. 39-48.

IFIE, K., 2010. An Investigation of the Antecedents of Service Delivery and Organisational Performance: A Service Culture Perspective. Loughborough University.

IHUA, U.B., 2009. SMEs Key Failure-Factors: A Comparison between the United Kingdom and Nigeria. Journal of Social Sciences, vol. 18, no. 3, pp. 199-207.

IRELAND, R.D. and HITT, M.A., 1999. Achieving and Maintaining Strategic Competitiveness in the 21st Century: The Role of Strategic Leadership. The Academy of Management Executive, vol. 13, no. 1, pp. 43-57.

JACKSON, T., AMAESHI, K. and YAVUZ, S., 2008. Untangling African Indigenous Management: Multiple Influences on the Success of SMEs in Kenya. Journal of World Business, 10, vol. 43, no. 4, pp. 400-416 ISSN 1090-9516. DOI 10.1016/j.jwb.2008.03.002.

JANSEN, J.J.P., GEORGE, G., VAN DEN BOSCH, F.A.J. and VOLBERDA, H.W., 2008. Senior Team Attributes and Organizational Ambidexterity: The Moderating Role of Transformational Leadership. Journal of Management Studies, vol. 45, no. 5, pp. 982-1007 ISSN 1467-6486. DOI 10.1111/j.1467-6486.2008.00775.x.

JANSEN, J.J.P., van den Bosch, F. A. J. and VOLBERDA, H.W., 2006. Exploratory Innovation, Exploitative Innovation, and Performance: Effects of Organizational Antecedents and Environmental Moderators. Management Science, vol. 52, no. 11, pp. 1661-1674.

JANSEN, J.J.P., van den Bosch, F. A. J. and VOLBERDA, H.W., 2005. Exploratory Innovation, Exploitative Innovation, and Ambidexterity: The Impact of Environmental and Organisational Antecedents. Schmalenbach Business Review, vol. 57, no. 4, pp. 351-363.

JAVALGI, R.G. and TODD, P.R., 2011. Entrepreneurial Orientation, Management Commitment, and Human Capital: The Internationalization of SMEs in India. Journal of Business Research, vol. 64, no. 9, pp. 1004-1010 ISSN 0148-2963. DOI 10.1016/j.jbusres.2010.11.024.

JOHNSON, R.B. and ONWUEGBUZIE, A.J., 2004. Mixed Methods Research: A Research Paradigm Whose Time has Come. Educational Researcher, vol. 33, no. 7, pp. 14-26.

JUNG, D.I., WU, A. and CHOW, C., 2008. Towards Understanding the Direct and Indirect Effects of CEO's Transformational Leadership on Firm Innovation. The Leadership Quarterly, vol. 19, no. 5, pp. 582-594.

KAMINSKI, P.C., DE OLIVEIRA, A.C. and LOPES, T.M., 2008. Knowledge Transfer in Product Development Processes: A Case Study in Small and Medium Enterprises (SMEs) of the Metal-Mechanic Sector from São Paulo, Brazil. Technovation, 2, vol. 28, no. 1-2, pp. 29-36 ISSN 0166-4972. DOI 10.1016/j.technovation.2007.07.001.

KANTER, R.M., 2010. Think Outside the Building. Harvard Business Review, March 2010, vol. 88, no. 3, pp. 34-34

KAUFFMANN, C., 2005. Financing SMEs in Africa. Issy-les-Moulineaux, France: Policy Insights, OECD Development Centre.

KENDALL, K.E. and KENDALL, J.E., 2002. Systems Analysis and Design, Fifth ed. New Jersey: Prentice Hall, Inc.

KAARST-BROWN, M.L., NICHOLSON, S., VON DRAN, G.M. and STANTON, J.M., 2004. Organizational Cultures of Libraries as a Strategic Resource. NY 13244 Library Trends, vol. 53, no. 1, pp. 33-53.

KELLOWAY, E.K., 1998. Using LISREL for Structural Equation Modelling. Thousand Oaks: Sage Publications.

KHOSLA, A., 2005. Exporting Problems: Arguments Against Technology Transfer, Science and Innovation Policy. Science and Development Network. Available from: http://www.scidev.net/en/science-and-innovation-policy/opinions/exporting-problems-arguments-against-technology-t.html.

KLINE, R.B., 2005. Principles and Practice of Structural Equation Modelling. Second ed. New York: The Guilford Press.

KOTLER, P., 1988. Marketing Management: Analysis. Planning and Control. London: Prentice-Hall Int.

KRATHWOHL, D.R., 2004. Methods of Educational and Social Science Research: An Integrated Approach. Second ed. Long Grove, Illinois: Waveland Press, Inc. ISBN 1-57766-333-0.

KURATKO, D.F., IRELAND, R.D., COVIN, J.G. and HORNSBY, J.S., 2005. A Model of Middle-Level Managers' Entrepreneurial Behaviour. Entrepreneurship: Theory and Practice, vol. 29, no. 6, pp. 699-716 SCOPUS.

KUSIAK, A., 2009. Innovation: A Data-Driven Approach. International Journal of Production Economics, 11, vol. 122, no. 1, pp. 440-448 ISSN 0925-5273. DOI 10.1016/j.ijpe.2009.06.025.

LAM, A., 2011. Innovative Organisations: Structure, Learning, and Adaptation. Paper presented at the DIME Final Conference, 6-8 April 2011, Maastricht.

LAM, A., 2005. Organizational Innovation. In: J. FAGERBERG, D.C. MOWERY and R.R. NELSON eds., The Oxford Handbook of Innovation, New York: Oxford University Press Inc.,. Organizational Innovation, pp. 115-147.

LANE, P.J., KOKA, B. and PATHAK, S., 2006. The Reification of Absorptive Capacity: A Critical Review and Rejuvenation of the Construct. Academy of Management Review, vol. 31, no. 4, pp. 833-863.

LEE, S., PARK, G., YOON, B. and PARK, J., 2010. Open Innovation in SMEs—An Intermediated Network Model. Research Policy, 3, vol. 39, no. 2, pp. 290-300 ISSN 0048-7333. DOI 10.1016/j.respol.2009.12.009.

LEE, S.K. and YU, K., 2004. Corporate Culture and Organizational Performance. Journal of Management Psychology, vol. 19, no. 4, pp. 340-359.

LEE, C. and YANG, H., 2011. Organization Structure, Competition and Performance Measurement Systems and their Joint Effects on Performance. Management Accounting Research, 6, vol. 22, no. 2, pp. 84-104 ISSN 1044-5005. DOI 10.1016/j.mar.2010.10.003.

LEE, S., PARK, G., YOON, B. and PARK, J., 2010. Open Innovation in SMEs—An Intermediated Network Model. Research Policy, 3, vol. 39, no. 2, pp. 290-300 ISSN 0048-7333. DOI 10.1016/j.respol.2009.12.009.

LEVINTHAL, D.A. and MARCH, J.G., 1993. The Myopia of Learning. Strategic Management Journal, vol. 14, no. S2, pp. 445-458.

LEVY, M. and POWELL, P., 2005. Strategies for Growth in SMEs: The Role of Information and Information Systems, in: Book Review: Strategies for Growth in SMEs: The Role of Information and Information System, Andreas Kuckertz (Ed.), International Small Business Journal, 2006, vol. 24, no. 3, pp. 326-328 ISSN 978-0-75-066351-9. DOI 10.1016/B978-075066351-9/50003-6.

LIAO, T. and RICE, J., 2010. Innovation Investments, Market Engagement and Financial Performance: A Study among Australian Manufacturing SMEs. Research Policy, 2, vol. 39, no. 1, pp. 117-125 ISSN 0048-7333. DOI 10.1016/j.respol.2009.11.002

LIN, C.Y. and CHEN, M.Y., 2007. Does Innovation Lead to Performance? An Empirical Study of SMEs in Taiwan. Management Research News, vol. 30, no. 2, pp. 115-132.

LIN, H. and McDonough, Edward F.,,III, 2011. Investigating the Role of Leadership and Organizational Culture in Fostering Innovation Ambidexterity. IEEE Transactions on Engineering Management, AUG, vol. 58, no. 3, pp. 497-509 ISSN 0018-9391. DOI 10.1109/TEM.2010.2092781.

LITWIN, M.S., 1995. How to Measure Survey Reliability and Validity: The Survey Kit 7. First ed. Thousand Oaks: SAGE Publications, Inc.

LOCKE, L.F., SPIRDUSO, W.W. and SILVERMAN, S.J., 2007. Proposals that Work: A Guide for Planning Dissertations and Grant Proposals. 5th ed. Thousand Oaks, Calif.: Sage Publications.

LOCKWOOD, N.R., 2007. Leveraging Employee Engagement for Competitive Advantage: HR's Strategic Role. Society for Human Resource Management, vol. 1, no. 1, pp. 1-11.

LUBATKIN, M.H., SIMSEK, Z., LING, Y. and VEIGA, J.F., 2006. Ambidexterity and Performance in Small-to Medium-Sized Firms: The Pivotal Role of Top Management Team Behavioural Integration. Journal of Management, Southern Management Association, vol. 32, no. 5, pp. 646-672.

MACCRACKEN, G., 1988. The Long Interview: Qualitative Research Methods Series 13. Newbury Park, California: Sage Publications, Inc.

MAINE, E. and GARNSEY, E., 2006. Commercializing Generic Technology: The Case of Advanced Materials Ventures. Research Policy, 4, vol. 35, no. 3, pp. 375-393 ISSN 0048-7333. DOI 10.1016/j.respol.2005.12.006.

MAMBULA, C., 2002. Perceptions of SME Growth Constraints in Nigeria. Journal of Small Business Management, vol. 40, no. 1, pp. 58-65.

MARCH, J.G., 2006. Rationality, Foolishness, and Adaptive Intelligence. Strategic Management Journal, vol. 27, no. 3, pp. 201-214 ISSN 1097-0266. DOI 10.1002/smj.515.

MARSHALL, C. and ROSSMAN, G.B., 2006.4th ed. Thousand Oaks: Sage Publications.

MARTÍNEZ-LEÓN, I.M. and MARTÍNEZ-GARCÍA, J.A., 2011. The Influence of Organizational Structure on Organizational Learning. International Journal of Manpower, vol. 32, no. 5/6, pp. 537-566.

MARTINS, E.C. and TERBLANCHE, F., 2003. Building Organizational Culture that Stimulates Creativity and Innovation. European Journal of Innovation Management, vol. 6, no. 1, pp. 64-74.

MATHEW, J., OGBONNA, E. and HARRIS, L.C., 2012. Culture, Employee Work Outcomes and Performance: An Empirical Analysis of Indian Software Firms. Journal of World Business, 4, vol. 47, no. 2, pp. 194-203 ISSN 1090-9516. DOI 10.1016/j.jwb.2011.04.006.

MEIJAARD, J., BRAND, M.J. and MOSSELMAN, M., 2002. Organisational Structure and Performance in Dutch SMEs. EIM Business & Policy Research, Scientific Analysis of Entrepreneurship and SMEs, Zoetermeer, pp. 1-23.

MENGUC, B. and AUH, S., 2010. Development and Return on Execution of Product Innovation Capabilities: The Role of Organizational Structure. Industrial Marketing

Management, 7, vol. 39, no. 5, pp. 820-831 ISSN 0019-8501. DOI 10.1016/j.indmarman.2009.08.004.

MENZEL, H.C., KRAUSS, R., ULIJN, J.M. and WEGGENMAN, M., 2008. Developing characteristics of an intrapreneurship supportive culture. In: A. FAYOLLE and P. KYROE eds., The Dynamics between Entrepreneurship, Environment and Education Cheltenham: Edward Elgar. Developing Characteristics of an Intrapreneurship Supportive Culture, pp. 77-102.

MILES, M.B. and HUBERMAN, A.M., 1994. Qualitative Data Analysis: An Expanded Sourcebook. Second ed. Thousand Oaks: SAGE Publications.

MINTZBERG, H., 1979. The Structuring of Organisations. Upper Saddle River, NJ: Prentice Hall.

MOM, T.J.M., Van Den Bosch, Frans A. J. and VOLBERDA, H.W., 2009. Understanding Variation in Managers' Ambidexterity: Investigating Direct and Interaction Effects of Formal Structural and Personal Coordination Mechanisms . Organization Science, vol. 20, no. 4, pp. 812-828 DOI 10.1287/ORSC.1090.0427.

MOM, T.J.M., Van Den Bosch, Frans A. J. and VOLBERDA, H.W., 2007. Investigating Managers' Exploration and Exploitation Activities: The Influence of Top-Down, Bottom-Up, and Horizontal Knowledge Inflows*. Journal of Management Studies, vol. 44, no. 6, pp. 910-931 ISSN 1467-6486. DOI 10.1111/j.1467-6486.2007.00697.x.

MORTON, S.C. and BURNS, N.D., 2009. Targeting Barriers to Innovation. In: P. WROBEL ed., The Innovation and Productivity Grand Challenge Northwood: Science Business Publishing Ltd. Targeting Barriers to Innovation, pp. 25-26.

NAIDOO, V., 2010. Firm Survival through a Crisis: The Influence of Market Orientation, Marketing Innovation and Business Strategy. Industrial Marketing Management, 11, vol. 39, no. 8, pp. 1311-1320 ISSN 0019-8501. DOI 10.1016/j.indmarman.2010.02.005.

NEEDS., 2004. National Economic Empowerment and Development Strategy (NEEDS). Abuja: The NEEDS Secretariat, National Planning Commission, Federal Secretariat.

NEUMAN, W.L., 2011. Social Research Methods, Qualitative and Quantitative Approaches. 7th ed. Boston: Pearson Education, Inc.

NEUMAN, W.L., 2007. Basics of Social Research, Qualitative and Quantitative Approaches. Second ed. Boston: Pearson Education, Inc.

NGUYEN, T.T.U. and C. MOTHE. Assessing the impact of Marketing and Organisational Innovations on Firm Performance, 3rd European Conference on Entrepreneurship and Innovation, MARRIOT, N., ed. 3rd European Conference on Entrepreneurship and Innovation. The University of Winchester, UK, 15-16 September 2008, 2008.

NWEZE, A., 2009. Concept of Small and Medium Enterprise (SME, the Nation, Lagos. Lagos: The Nation.

O'CASS, A. and SOK, P. Exploring Innovation Driven Value Creation in B2B Service Firms: The Roles of the Manager, Employees, and Customers in Value Creation. Journal of Business Research, no. 0 ISSN 0148-2963. DOI 10.1016/j.jbusres.2012.03.004.

OECD/Eurostat., 2005. Guidelines for Collecting and Interpreting Innovation Data, Oslo Manual by Organisation for Economic Co-Operation and Development and Statistical Office of the European Communities. 3rd ed. Paris: OECD Publishing.

OGECHUKWU, A.D. and LATINWO, H.K., 2010. Entrepreneurial Developments and Small Scale Industry Contribution to Nigerian National Development- A Marketing Interface. Information Management and Business Review, vol. 1, no. 2, pp. 51-68.

OKPARA, J.O., 2011. Factors Constraining the Growth and Survival of SMEs in Nigeria: Implications for Poverty Alleviation. Management Research Review, vol. 34, no. 2, pp. 156-171.

OKPARA, J.O., 2009. Strategic Choices, Export Orientation and Export Performance of SMEs in Nigeria. Management Decision, vol. 47, no. 8, pp. 1281-1299.

OLINSKY, A., CHEN, S. and HARLOW, L., 2003. The Comparative Efficacy of Imputation Methods for Missing Data in Structural Equation Modelling. European Journal of Operational Research, vol. 151, no. 1, pp. 53-79.

OLSON, E.M., WALKER, O.C. and RUEKERT, R.W., 1995. Organizing for Effective New Product Development: The Moderating Role of Product Innovativeness. Journal of Marketing, vol. 59, no. 1, pp. 48-62.

OMANKHANLEN, O., 2011a. CBN Unfolds 6-Point Agenda. Lagos: Nigerian Tribune 09 March 2011.

OMANKHANLEN, O., 2011b. Diamond Bank Partners USAID on Credits to Entrepreneurs. Lagos: Nigerian Tribune 08 February 2011.

ONUORAH, M., NZEH, E., FAGBEMI, A. and MUSA, N., 2012. Boko Haram Crisis Claims 3,000.

O'REGAN, N., GHOBADIAN, A. and GALLEAR, D., 2006a. In Search of the Drivers of High Growth in Manufacturing SMEs. Technovation, 1, vol. 26, no. 1, pp. 30-41 ISSN 0166-4972. DOI 10.1016/j.technovation.2005.05.004.

O'REGAN, N., GHOBADIAN, A. and SIMS, M., 2006b. Fast Tracking Innovation in Manufacturing SMEs. Technovation, 2, vol. 26, no. 2, pp. 251-261 ISSN 0166-4972. DOI 10.1016/j.technovation.2005.01.003.

O'REILLY, C.A.,III and TUSHMAN, M.L., 2011. Organizational Ambidexterity in Action: How MANAGERS EXPLORE AND EXPLOIT. California Management Review, SUM, vol. 53, no. 4, pp. 5-22 ISSN 0008-1256.

O'REILLY, C.A., CHATMAN, J. and CALDWELL, D.F., 1991. People and Organizational Culture: A Profile Comparison Approach to Assessing Person-Organization Fit. The Academy of Management Journal, Sep., vol. 34, no. 3, pp. pp. 487-516 ISSN 00014273.

O'REILLY, C.A. and TUSHMAN, M.L., 2007. Ambidexterity as a Dynamic Capability: Resolving the Innovator's Dilemma. Working Paper no 07-088. Cambridge, MA: Harvard Business School.

O'Reilly, Charles A.,,III and TUSHMAN, M.L., 2011. Organizational Ambidexterity in Action: How MANAGERS EXPLORE AND EXPLOIT. California Management Review, SUM, vol. 53, no. 4, pp. 5-22 ISSN 0008-1256.

PARK, B.I. and GHAURI, P.N., 2011. Key Factors Affecting Acquisition of Technological Capabilities from Foreign Acquiring Firms by Small and Medium Sized Local Firms. Journal of World Business, 1, vol. 46, no. 1, pp. 116-125 ISSN 1090-9516. DOI 10.1016/j.jwb.2010.05.023.

PASHTENKO, V.H., ROY, M.H. and DUGAL, S.S., 2000. The Relationship between Transitory Organizational Structure and Non-Linear Environments. Management Decision, vol. 38, pp. 118-129.

PATTERSON, P., T. YU and K. DE RUYTER. Understanding Customer Engagement in Services, ALI, Y. and VAN DESSEL, M., eds. The Australian and New Zealand Marketing Academy (ANZMAC) Conference, 2006.

PELLEGRINI-MASINI, G. and LEISHMAN, C., 2011. The Role of Corporate Reputation and Employees' Values in the Uptake of Energy Efficiency in Office Buildings. Energy Policy, 9, vol. 39, no. 9, pp. 5409-5419 ISSN 0301-4215. DOI 10.1016/j.enpol.2011.05.023.

PETTIGREW, A., MASSINI, S. and NUMAGAMI, T., 2000. Innovative Forms of Organising in Europe and Japan. European Management Journal, vol. 18, pp. 259-273.

PIERCE, J., G., 2004. Organisational Culture and Professionalism. an Assessment of the Professional Culture of the US Army Senior Level Officers Corps. PhD Thesis ed. Pennsylvania: Graduate School, The Pennsylvania State University.

PING, R.A., 2004. On Assuring Valid Measures for Theoretical Models using Survey Data. Journal of Business Research, vol. 57, no. 2, pp. 125-141.

PRABHU, G.N. and KRISHNAN, R.T., 2005. New Product Development. Indian Institute of Management Bangalore, vol. September, pp. 81-96.

PUGH, S., 1991. Total Design: Integrated Methods for Successful Product Engineering. London: Pearson Education Limited.

QIAN, G. and LI, L., 2003. Profitability of Small- and Medium-Sized Enterprises in High-Tech Industries: The Case of the Biotechnology Industry. Strategic Management Journal, vol. 24, no. 9, pp. 881-887 ISSN 1097-0266. DOI 10.1002/smj.344.

RAISCH, S., 2008. Balanced Structures: Designing Organizations for Profitable Growth. Long Range Planning, OCT, vol. 41, no. 5, pp. 483-508 ISSN 0024-6301. DOI 10.1016/j.lrp.2008.06.004.

RAISCH, S. and BIRKINSHAW, J., 2008. Organizational Ambidexterity: Antecedents, Outcomes, and Moderators. Journal of Management, JUN, vol. 34, no. 3, pp. 375-409 ISSN 0149-2063. DOI 10.1177/0149206308316058.

RAISCH, S., BIRKINSHAW, J., PROBST, G. and TUSHMAN, M.L., 2009. Organizational Ambidexterity: Balancing Exploitation and Exploration for Sustained Performance. Organization Science, JUL-AUG, vol. 20, no. 4, pp. 685-695 ISSN 1047-7039. DOI 10.1287/orsc.1090.0428.

RAMMER, C., CZARNITZKI, D. and SPIELKAMP, A., 2009. Innovation Success of Non-R&D-Performers: Substituting Technology by Management in SMEs. Small Business Economics, 06, vol. 33, no. 1, pp. 35-58, ISSN 0921898X. DOI 10.1007/s11187-009-9185-7.

RAY, S. and RAY, P.K., 2011. Product Innovation for the People's Car in an Emerging Economy. Technovation, vol. 31, Issues 5-6, pp. 216-227, ISSN 0166-4972. DOI 10.1016/j.technovation.2011.01.004

RHEE, J., PARK, T. and LEE, D.H., 2010. Drivers of Innovativeness and Performance for Innovative SMEs in South Korea: Mediation of Learning Orientation. Technovation, 1, vol. 30, no. 1, pp. 65-75 ISSN 0166-4972. DOI 10.1016/j.technovation.2009.04.008.

RICHMAN, A., 2006. Everyone Wants an Engaged Workforce, How can You Create it?. Work span, vol. 1, no. 6, pp. 36-39.

ROBSON, C., 2002. Real World Research: A Resource for Social Scientists and Practitioner-Researchers. Second ed. Malden, MA: Blackwell.

ROSENBUSCH, N., BRINCKMANN, J. and BAUSCH, A., 2010. Is Innovation always Beneficial? A Meta-Analysis of the Relationship between Innovation and Performance in SMEs. Journal of Business Venturing, pp. 1-17 ISSN 0883-9026. DOI 10.1016/j.jbusvent.2009.12.002.

SAADOUN, M. and YANNING, L., 2006. Research, Innovation and Technological Development. In: P. CORSI, S. RICHIR, H. CHRISTOFOL and H. SAMIER eds., Innovation Engineering: The Power of Intangible Networks. Research, Innovation and Technological Development.

SALAVOU, H., BALTAS, G. and LIOUKAS, S., 2004. Organisational Innovation in SMEs: The Importance of Strategic Orientation and Competitive Structure. European Journal of Marketing, vol. 38, no. 9/10, pp. 1091-1112.

SAUNDERS, M., LEWIS, P. and THORNHILL, A., 2007. Research Methods for Business Students. Fourth ed. Harlow: Pearson Education Limited.

SCHEIN, E.H., 2009. The Corporate Culture Survival Guide, New and Revised ed. San Francisco: Jossey-Bass, A Wiley Imprint.

SCHMIDT, T., 2005. What Determines Absorptive Capacity? DRUID 10th Anniversary Summer Conference. Dynamics of Industry and Innovation: Organisations, Networks and Systems, June 27-29, 2005 ed.

SCHUBERT, T., 2009. Marketing and Organisational Innovations in Entrepreneurial Innovation Processes and their Relation to Market Structure and Firm Characteristics, The DRUID Society Summer Conference, June 17-19, 2009. CBS, Copenhagen, Denmark

SCHUMACKER, R.E. and LOMAX, R.G., 2004. A Beginner's Guide to Structural Equation Modelling. Second ed. Mahwah NJ: Lawrence Erlbaum Associates.

SCHUTT, R.K., 2006. Investigating the SOCIAL WORLD. fifth ed. Thousand Oaks: SAGE Publications ISBN 1-4129-2737-4.

SCOTT-KEMMIS, D., et al., 2008. Absorbing Innovation by Australian Enterprises: The Role of Absorptive Capacity . Report on the Project for the Department of Industry, Tourism and Resources

SDSMT., 2011. The Organisational Culture Assessment Instrument Tool. South Dakota School of Mines and Technology. Available from: www.sdsmt.edu.

SERRADELL-LÓPEZ, E. and GRAU-ALGUERO, C., 2010. The Impact of Corporate Culture on the Absorptive Capacity and Innovative Capacity of Companies. Creativity and Innovation in an International Context, The Conference of the International Network of Business and Management Journal

SHARMA, S., 1996. Applied Multivariate Techniques. New York: John Wiley and Sons.

SILVERMAN, D., 2000. Analysing Talk and Text. In: N. DENZIN and Y. LINCOLN eds., Handbook of Qualitative Research Thousand Oaks: Sage. Analysing Talk and Text, pp. 821-834.

SIMSEK, Z., 2009. Organizational Ambidexterity: Towards a Multilevel Understanding. Journal of Management Studies, JUN, vol. 46, no. 4, pp. 597-624 ISSN 0022-2380. DOI 10.1111/j.1467-6486.2009.00828.x.

SLEVIN, D.P. and COVIN, J.G., 1997. Strategy Formation Patterns, Performance, and the Significance of Context. Journal of Management, vol. 23, no. 2, pp. 189-209 ISSN 0149-2063. DOI 10.1016/S0149-2063(97)90043-X.

SMEDAN-Mandate., 2011. The Small and Medium Enterprises Development Agency of Nigeria. SMEDAN. 15 September 2011, Available from: http://www.smedan.gov.ng/.

SMITH, W.K., 2006. Top Management Team Approaches to Simultaneously Managing Exploration and Exploitation. Academy of Management Best Conference Paper Proceedings.

SMITH, W.K. and TUSHMAN, M.L., 2005. Managing Strategic Contradictions: A Top Management Model for Managing Innovation Streams. Organisation Science, vol. 16, no. 5, pp. 522-536.

SU, Z., LI, J., YANG, Z. and LI, Y., 2011. Exploratory Learning and Exploitative Learning in Different Organizational Structures. Asia Pacific Journal of Management, vol. 28, no. 4, pp. 697-714.

SUBAIR, G., 2011. States Urged to Support SMEDAN to Reposition IDCs, Nigerian Tribune. Abuja: [viewed 30 March 2011]. Available from: http://tribune.com.ng/index.php/tribune-business/19300-states-urged-to-support-smedan-to-reposition-idcs.

SUDHIR-KUMAR, R. and BALA-SUBRAHMANYA, M.H., 2010. Influence of Subcontracting on Innovation and Economic Performance of SMEs in Indian Automobile Industry. Technovation, 12, vol. 30, no. 11-12, pp. 558-569 ISSN 0166-4972. DOI 10.1016/j.technovation.2010.06.005.

TADDESE, F. and OSADA, H., 2010. Process Techno - Innovation using TQM in Developing Countries Empirical Study of Deming Prize Winners. Journal of Technology Management & Innovation, vol. 5, no. 2, pp. 46-65.

TANG, Z. and TANG, J., 2012. Stakeholder–firm Power Difference, Stakeholders' CSR Orientation, and SMEs' Environmental Performance in China. Journal of Business Venturing, 7, vol. 27, no. 4, pp. 436-455 ISSN 0883-9026. DOI 10.1016/j.jbusvent.2011.11.007.

TASHAKKORI, A. and TEDDLIE, C., 2003. Handbook of Mixed Methods in the Social and Behavioural Sciences. Thousand Oaks, CA: SAGE.

TEDDLIE, C. and TASHAKKORI, A., 2009. Foundations of Mixed Methods Research: Integrating Quantitative and Qualitative Approaches in the Social and Behavioural Sciences. Los Angeles: SAGE Publications, Inc.

TEECE, D.J., 2008. Technology and Technology Transfer: Mansfieldian Inspirations and Subsequent Developments. In: A.N. LINK and M. BLAUG eds., Innovation Policies and Social Impact, The Economics of Innovation Policy Volume II, The International Library of Critical Writings in Economics, Cheltenham: An Elgar Reference Collection. Technology and Technology Transfer: Mansfieldian Inspirations and Subsequent Developments, pp. 327-343.

TEECE, D.J., 2000. Managing Intellectual Capital. Oxford: Oxford University Press.

TERZIOVSKI, M., 2010. Innovation Practice and its Performance Implications in Small and Medium Enterprises (SMEs) in the Manufacturing Sector: A Resource-Based View. Strategic Management Journal, vol. 31, no. 8, pp. 892-902 ISSN 1097-0266. DOI 10.1002/smj.841.

TUSHMAN, M.L. and O'REILLY, C.A., 1996. Ambidextrous Organizations: Managing Evolutionary and Revolutionary Change. California Management Review, vol. 38, no. 4, pp. 8-30.

UDECHUKWU, F.N., 2003. Survey of Small and Medium Scale Industries and their Potentials in Nigeria. CBN Training Centre, Lagos: Central Bank of Nigeria.

UoSG., 2011. Small and Medium Sized Enterprises: Definitions. University of Strathclyde Library, Available from: http://www.lib.strath.ac.uk/busweb/guides/smedefine.htm

VANCE, R.J., 2006. Employee Engagement and Commitment: A Guide to Understanding, Measuring and Increasing Engagement in Your Organization. SHRM Foundation’s Effective Practice Guidelines, vol. 1, no. 1, pp. 1-53.

VAN DE VRANDE, V., DE JONG, J.P.J., VANHAVERBEKE, W. and DE ROCHEMONT, M., 2009. Open Innovation in SMEs: Trends, Motives and Management Challenges. Technovation, 7, vol. 29, no. 6-7, pp. 423-437 ISSN 0166-4972. DOI 10.1016/j.technovation.2008.10.001

VENKATRAMAN, N., LEE, C. and IYER, B., 2007. Strategic Ambidexterity and Sales Growth: A Longitudinal Test in the Software Sector Boston: Boston University School of Management.

VERHEUGEN, G., 2003. The New SME Definition, User Guide and Model Declaration, European Union Enterprise and Industry Publications <http://ec.europa.eu/enterprise/policies/sme/files/sme_definition/sme_user_guide_en.pdf assessed on 21 March 2011>.

VOLBERDA, H.W., 1996. Toward the Flexible Form: How to Remain Vital in Hypercompetitive Environments. Organisation Studies, vol. 7, pp. 359-374.

VOSS, G.B., SIRDESHMUKH, D. and VOSS , Z.G., 2008. The Effects of Slack Resources and Environmental Threat on Product Exploration and Exploitation. Academy of Management Journal, vol. 51, no. 1, pp. 147-164.

WÄGAR, K., ROOS, I., RAVALD, A. and EDVARDSSON, B., 2012. My Customers are in My Blind Spot : Are they Changing and I Cannot See it?. Journal of Service Research, vol. 15, no. 2, pp. 150-165.

WALSH, I., KEFI, H. and BASKERVILLE, R., 2010. Managing Culture Creep: Toward a Strategic Model of User IT Culture. The Journal of Strategic Information Systems, 12, vol. 19, no. 4, pp. 257-280 ISSN 0963-8687. DOI 10.1016/j.jsis.2010.09.002

WALTERS, D. and BUCHANAN, J., 2001. The New Economy, New Opportunities and New Antecedents. Management Decision, vol. 39, pp. 818-833.

WANG, W., ZHAO, J. and CHEN, H., 2009. Management Innovation and Core Competitive Advantages of SMEs. Chinese Business Review, vol. 8, no. 12, pp. 53-57.

WARD, P.T. and DURAY, R., 2000. Manufacturing Strategy in Context: Environment, Competitive Strategy and Manufacturing Strategy. Journal of Operations Management, 2, vol. 18, no. 2, pp. 123-138 ISSN 0272-6963. DOI 10.1016/S0272-6963(99)00021-2.

WARREN, M.P., FORRESTER, P.L., HASSARD, J.S. and COTTON, J.W., 2000. Technological Innovation Antecedents in the UK Ceramics Industry. International Journal of Production Economics, 4/1, vol. 65, no. 1, pp. 85-98 ISSN 0925-5273. DOI 10.1016/S0925-5273(99)00092-4.

YALCINKAYA, G., CALANTONE, R.J. and GRIFFITH, D.A., 2007. An Examination of Exploration and Exploitation Capabilities: Implications for Product Innovation and Market Performance. Journal of International Marketing, vol. 15, no. 4, pp. 63-93.

YIN, R., 2009. Case Study Research: Design and Methods. 4th ed. Thousand Oaks: Sage Publications Inc.

YUAN, L., ZHONGFENG, S. and YI, L., 2010. Can Strategic Flexibility Help Firms Profit from Product Innovation?. Technovation, 6, vol. 30, no. 5-6, pp. 300-309 ISSN 0166-4972. DOI 10.1016/j.technovation.2009.07.007.

YUSUF, S., 2009. From Creativity to Innovation. Technology in Society, vol. 31, no. 1, pp. 1-8 ISSN 0160-791X. DOI 10.1016/j.techsoc.2008.10.007.

ZAHRA, S.A. and GEORGE, G., 2002. The Net-Enabled Business Innovation Cycle and the Evolution of Dynamic Capabilities. Information Systems Research, vol. 13, no. 2, pp. 147-150.

ZENG, S.X., XIE, X.M. and TAM, C.M., 2010. Relationship between Cooperation Networks and Innovation Performance of SMEs. Technovation, vol. 30, no. 3, pp. 181-194 ISSN 0166-4972. DOI 10.1016/j.technovation.2009.08.003.

ZHANG, M., MACPHERSON, A. and JONE, O., 2006. Conceptualizing the Learning Process in SMEs : Improving Innovation through External Orientation. International Small Business Journal, vol. 24, no. 3, pp. 299-323.

# Appendices

## Appendix A: Introductory Pack for the Study
## Section 1: The Cover Letter

**Wolfson School of Mechanical and Manufacturing Engineering**
**Loughborough University Leicestershire LE11 3TU UK**
**+44 (0) 1509 263171**

1 September 2011

Dear Sir/Madam,

### Section 1: Letter of Introduction (Research Study on Nigerian SMEs)

My name is Oluseyi Moses Ajayi, a food engineering graduate from Obafemi Awolowo University, Ile-Ife, Osun State, Nigeria. I am currently a post graduate researcher, focussing on knowledge management, innovation and productivity, in the Wolfson School of Mechanical and Manufacturing Engineering, Loughborough University, United Kingdom, under the supervision of Dr Susan Morton (S.C.Morton@lboro.ac.uk).

This research is being conducted to investigate the Nigerian Small and Medium-sized Enterprises' organisational structure and culture and their influence on their Knowledge Capacities, Organisational and Marketing Innovation Capabilities.

The overall aim of the research is to develop an innovation framework that promotes "effective innovation" among the Nigerian SMEs. Effective innovation is one that has direct and positive impact on business returns. Your company's participation will require the researcher conducting interviews with your managerial staff and administering a survey to your non-managerial employees. Responses to the questions will help to identify the components of organisational structure and culture that contribute positively to:

i. The organisational innovation capability among the Nigerian SMEs,
ii. The marketing innovation capability among the Nigerian SMEs,
iii. The firm's knowledge capacities,
iv. The overall firm innovation performance.

Summary of the findings will be sent to the participating firms. Please note that the study will be carried out in line with utmost adherence to ethical guidelines and considerations. Responses will be anonymised and used solely for this research project.

Thank you in advance for your cooperation. Should you have any concerns or queries, please do not hesitate to contact me (+44 755 127 5283 or O.M.Ajayi@lboro.ac.uk).

Many thanks.

Kind regards,

**Oluseyi Moses Ajayi**

**Section 2: Additional Information about the Research**

### 2.1 Scope of this research

The research seeks to discover the components of organisational structure and culture of Nigerian Small and Medium-sized Enterprises (SMEs) and how these components affect the development and deployment of knowledge capacities; organisational innovation capability; and marketing innovation capability in Nigerian SMEs. Findings will facilitate the development of a conceptual framework needed to promote effective innovations (producing what customers want) and the long-term survival of SMEs. At the end of the study, participating firms should be able to identify dimensions of organisational structure and culture needed to enhance their knowledge capacities, as well as their organisational innovation and marketing innovation capabilities. These are soft components of innovation system likely to be needed in generating technological innovations and enhancing long term survival of firms in continuous changing business environment.

### 2.2 The research plan

The research is in two stages.

1) The first part will be exploratory and will require the researcher to conduct a pilot interview with two managers. Each interview, which will last no more than an hour, is meant to get an overview of your organisation's culture and structure; to understand your organisational innovation and marketing innovation capabilities; and to assess how effective your organisation develop and deploy its knowledge capacities. The purpose of the exercise is to enable the researcher to identify components of organisational structure and culture that promote effective and efficient development and deployment of soft components of innovation system. These soft components are likely to be crucial to effective innovations and to performance improvement in firms.

2) The researcher will administer questionnaires to your non-managerial staff. The questionnaire will only take a few minutes of your employees' time to complete. The aim of this stage is to verify the findings from the first stage using statistical approach. Findings will enhance the development of a conceptual framework capable of promoting innovations that have positive impacts on firm performance. Achieving this objective will be through identifying the components of organisational structure and culture that support:

1. Increase in organisational innovation capability
2. Increase in marketing innovation capability
3. Efficient and effective development and deployment of firm's knowledge capacities, and
4. The overall innovation performance of firm.

**Section 3: Information about the University and the Research Group**

### 3.1 The University

Over the past 100 years of its existence, Loughborough University has earned and continued to maintain a place among the highly regarded top universities in the United Kingdom both on the Guardian and Sunday Times University Guide. In the 2008-2009 Sunday Times university ranking, the university won the 'University of the Year award'. Loughborough was also distinguished for its commitment to supporting international students in the 2007 awards, by winning the 'Outstanding Support for Overseas Students' Award. Likewise, for the past five consecutive years (2006-2010), Loughborough University has been voted the UK's 'Best Student Experience' in the prestigious Times Higher Awards. The most recent league table (2012) by the Guardian ranked the university among the top 10 universities in the UK.

### 3.2 Wolfson School of Mechanical and Manufacturing Engineering

The Research School is one of the biggest of its kind in the UK and hosts a number of leading-edge Research Centres, one of which is the Sustainable Manufacturing Research Group. The engineering school in which the Research Group is based has an enviable international reputation for being at the forefront of technological innovation and for maintaining extensive links with industry. It is ranked 5$^{th}$ in the 2008 Guardian University Subject League Tables; 7$^{th}$ in the 2008 UK Research Assessment Exercise in both the Times Higher and The Guardian and in the 2007 Sunday Times University Guide, the department's research was rated world class.

### 3.3 The Research Group

Sustainable Manufacturing Research Group is multidisciplinary in nature, and the research group works closely with industrial collaborators and other University Research Groups of its kind. Among other things, some of the research interests of the group include knowledge management; innovation and productivity; environmental sustainability through decrease in consumption of raw materials and energy, etc. Some key members of the research group focus on manufacturing organisations, carrying out research in all aspects of manufacturing organisation and management. These include the development and operational aspects of business. The research strategy involves how to develop and deploy efficient and effective business processes and engineering systems, through a better understanding of organisational and human factors. The operational strategy creates a portfolio of complementary projects that address defined themes from a multi-disciplinary and multi-departmental perspective, thereby ensuring cross fertilisation of existing and emerging knowledge.

Thank you in advance for favourable anticipated consideration of this appeal. If you have any concerns, please do not hesitate to call me on +44 755 127 5283 or send me an email using O.M.Ajayi@lboro.ac.uk.

**Appendix B: A brief profile of the researcher published by The Tribune**



# OAU graduate leads others in UK

Written by Kehinde Adio
Thursday, 25 November 2010

| Print |

Share

A 31-year-old former student of Obafemi Awolowo University, Ile-Ife, Mr. Oluseyi Moses Ajayi, who graduated with a First Class (Hons) Degree from the Department of Food Science and Technology, has recorded yet another feat as he emerged the best Master of Science (M.Sc) student in Wolfon School at Loughborough University, Leicestershire, United Kingdom.

A release by the Public Relations Officer of the university, Mr. Abiodun Olarewaju, stated that Mr. Ajayi, who exhibited an exceptional brilliance, characteristic of Obafemi Awolowo University students and graduates, in all the courses taught in Advanced Manufacturing Engineering and Management, also won the 2009/2010 Professor Peter Nevitt prize and 2009/2010 School Merit Prize for Best Student.

The Vice-Chancellor of OAU, Professor Michael Faborode, has lauded Mr. Oluseyi Ajayi for been a good and worthy ambassador of Obafemi Awolowo University, who, through his superlative academic performance in UK, has again, openly demonstrated the intellectual arsenal with which the university always equip her students.

(Source: http://tribune.com.ng/index.php/education/13888-oau-graduate-leads-others-in-uk)

## Appendix C: Overview of the Organisations selected for the Pilot Studies

### Company A (Int. 1)

Company A is an information and communications technology solution provider, with 19 employees. It was set up in 2005 to offer mobile applications, web applications, internet marketing, custom applications and business productivity solutions. The company provides information technology services to government-owned agencies, private companies and individuals. Its core services are web applications development and services, mobile applications and E-branding solutions. The web related services and solutions offered by the company include efficient and effective webpages, E-shops, E-payment and E-commerce solutions, robust and secured web hosting, Enterprise software development, Deployment and Management, multimedia 2D/3D animations and presentations. The mobile applications include bulk SMS for individual and corporate bodies and SMS alert systems for various industries. The E-branding solutions include Banner Ads, link building, classified Ads, social media campaign, search engine optimisation, email marketing, SMS marketing and online adverts solutions. Towards fulfilling the customers' requirements and achieving organisational excellence, the company philosophy is designed around key areas; these are customer enthusiasm, passion for technology, on-going improvement, intelligent aggressive approach and employee satisfaction.

*(Sources: Research Interviews 13/09/2011and Company's website)*

### Company B (Int. 2)

Company B is a partnership company between Nigerian and Italian partners. It was established on established in December 5th 1980. As at the day of the interview (14th September, 2011), the staff strength was 55 employees. The company is into design, production, distribution and installation of manufactured and forged products made of wrought iron. Its major products include stairs, gates, railings and windows grills, balconies rails, fences for mostly residential and commercial buildings. Other raw materials used for its operations are wood, galvanised iron and stainless steel. The company uses specialised professionals and equipment to design all the details of each creation for its products. The company always strives for organisational excellence, take conscious effort to review its procedures from time to time. As a result of this, the company was able to improve on the quality of its products and services to its

clients. In its pursuit for organisational excellence, the company enjoys continuous access to learning, courtesy of its foreign partner. The foreign partner was awarded with the Quality Certification ISO 9001 in 1999 and 2003. More recently in February 2006, the company obtained the ISO 14001 certification, dedicated to environmental preservation. The company remains committed to staff development, research on quality controls and constant improvements, particularly on the area of aesthetic and technical innovations. Staff knowledge of the jobs is an essential component of the company success, while safety and beauty are essential features of its products and services.

*(Sources: Research Interviews and Company's website)*

**Company C (Int. 3)**

The company was established and started operation in 1990. Company C produces various brands of alcoholic and non- alcoholic drinks. The company, which started operation from a three-room apartment, on the outskirts of Lagos, with three workers, is currently located in one of the industrial estates in Nigeria, with current staff strength of fifty employees, including not less than eight professionally qualified staff. The company today manufactures more than eight different brands of non-alcoholic and alcoholic drinks from natural fruits. A large proportion of demand for the company's products comes from the South-West geo-political zone of the country. Market extension strategies are paving ways for its products in other regions of the country. The company also offers customised products for several events. With respect to competitive advantage, the company always makes conscious effort to offer quality products from natural fruits at relatively low prices to its customers. Quality control unit ensures that all products meet the specified parameters.

*(Source: Research Interview 14 September 2011)*

**Company D (Int. 4)**

Company D was established in 1988 with current staff strength of 32. The company designs, manufacture, and install industrial signs for most of the top oil and gas companies in Nigeria. Some of the company's clients include Texaco Nigeria Plc., MRS Oil Nigeria Plc. (formerly Chevron Oil Nigeria plc.), TOTAL Nigeria Plc., Conoil Plc., and Nigerian AGIP Oil Company. The company offers on the job training for its new employees. The company often liaises with the government advertisement

agency from time to time to ensure that its clients do not fall victims of the newly introduced advertising laws in the country. To ensure continuous satisfaction of its clients, the company often offers to bear the cost of all or part of the maintenance work done on its clients' signs on site, depending on the level of damage to the signs.

*(Source: Research interview 14 September 2011)*

**Company E (Int. 5)**

The company manufactures electrical power distributed systems and industrial motor control. Company E was incorporated as Limited Liability Company on the November 1 1994. The current staff strength is 14. The services of the company include: design and assembly of distribution board, production of lighting kiosk, motor starters, manual change over, electrical panel and control, street light control, feeder pillar, power factor correction equipment, power distribution and motor control centre panel services. Three sections in the company are the administrative, the sales and the technical units. The administrative section sees to the general management of the company and also the accounting is placed under it. The sales unit sees to the marketing and promotion of the company's products. Activities of the technical unit are design, manufacture and testing of the company's products. Soft start soft stop unit is a new programmable product recently introduced to the market by the company; it is currently used by some oil companies in the country. The management of the company always ensures that company's customers are satisfied by listening to them and by ensuring that that the company's products are according to the customers' specifications. As a result of its goodwill and reliable products, the company is benefiting a lot from introductions to new customers via its old customers. The company's competitive advantage can be linked to both in-house and external training of the employees; good workplace relationship among the employees; employee working experience and long term commitment of the employees; leadership by example and leading by doing; and excellent relationship with the customers and suppliers. The company's major clients are Government agencies, construction companies and building contractors.

*(Sources: Research Interview 16 September 2011and Company's brochure)*

**Company F (Int. 6)**

Company F is an engineering company based in Osun State. The company designs, manufactures and sells different kinds of electrical and mechanical machines for large, medium-sized, small and micro scale industries. As at the day of the interview (19th September, 2011), the staff strength was twenty-six (26). The company was established in 1991. In addition to fabrication of electrical and mechanical machines, the company also offers various services including electrical installation and rewinding, etc. The company has been witnessing several successes in its machine design, manufacture and sale. Its products have been good and robust substitutes for the imported machines despite being sold at lower prices when compared with the prices of the imported ones. Some of the company's remarkable products include industrial battery chargers manufactured for the Power Holding Company of Nigeria installations and some broadcasting stations, and ultraviolet water treatment plants and composite water filters. The company has represented its host State and the country in different capacities at the national and the international trade fair competitions. The company has passion for industrial growth and technological advancement and also recognises the significance of the millennium development goal in Nigeria and Africa. The company updates its products with new innovations from time to time; this is evident in the continuous reduction in the cost of production and consequent reduction in the prices of its products.

(Sources: Interviews and company's website)

**Company G (Int. 7 and Int. 8)**

The company was incorporated on August 1988. The principal operation of the company is manufacturing of mild steel products, these include nails, binding wires, Building Reinforcement Concrete (BRC), flat sheets, etc. it is located in Osun State and the staff strength is 80. On the job training forms the crucial component of the employee training. In the last four years, the management team of the company have been working tremendously to improve the working conditions of the employees and this has improved the commitment of the employees and sense of belonging to the company. While producing according to the customers' requirements, company's products are according to the recognised standards. In addition to this, customised calendars and gifts are distributed at the end of every year to the customers in order to

secure their continuous loyalty. The company has good relationship with its customers and most of its new customers are through referral from the old customers.

*(Source: Research Interview 20 September 2011)*

**Company H (Int. 9)**

The company was established and started operations in 2009 as a manufacturer of plastic goods and wares. Its main products at present are plastic bottles and caps. It is located in Ogun State. The on-going strategic decisions include, among other things, staff training and development, waste reduction in the manufacturing operations, changes in the packaging designs for products, and improved relationship with customers. In order to provide reliable and efficient customer-tailored products and services for its customers, the company is investing in training of employees and in equipment acquisition. The management of the company is presently working on how to secure external funds in support of the company's operations and to also improve the company's cash-flow. The company's management relates on one-on-one basis with its customers. In order to ensure continuous satisfaction of its customers, the management collects customers' responses and feedbacks, while the quality control department see to any issues raised by the customers from time to time. The company staff strength is 75.

*(Source: Research Interview 22 September 2011)*

**Company I (Int. 10)**

The company is a pioneer transformer manufacturing company in Nigeria, established since 1972. The company's staff strength was 96 as at the interview date, 22 September 2011. The company manufactures, assembles and refurbishes different ratings of power and distribution transformers, with Nigeria, the West and East Africa sub-regions as target markets. The company has also been actively involved in developing the local engineers and the technicians. The company also offers repair and maintenance services of diesel generator plants and pumps for some power generating institutions. The company has developed state of the art factory for serving the electrical needs of the Nigerian and West and East African Markets through collaboration with the oversee partner. Its factory undertakes manufacture and repair of power and distribution transformers from 50 KVA up to30 MVA within 33 KV/11KV Voltage Class through its highly skilled and experienced engineering and

service teams. The company has well over 8,000 power and distribution transformers of various ratings across national grid in Nigeria. In order to enhance its competitive advantage, staff training is being provided by the international technical partner from time to time, thus making its technical staff to be experts in transformer technology. In addition to giving warranty on its brand new transformers, the company also gives guarantee of 12 months on any refurbishment work done on damaged and defective transformers.

*(Sources: Company's brochure and Research Interview 22 September 2011)*

**Company J (Int. 11)**

The company is a printing and packaging manufacturing company. The company started operations in 2009 with few workers. As at 22 September, 2011, the staff strength was 35. Since inception, the company has been experiencing rapid growth with additional purchase of state-of-the-art equipment for the operations of the company. The company designs and produces packaging cartons of different sizes and shapes for well-known pharmaceutical and distillery companies in the country. The company specialises in every possible size and specification of cardboard carton. Over the past 2 years, the company has established a reputation for consistently matching its products to the requirements of the customers and for delivering superb quality products at the lowest possible price. The products are with the company's stamp of quality. The manufacturing facility is capable of producing both the conventional and the die-cut plain or printed cartons. The established and fully equipped marketing team of the company source for potential customers and see to the continuous growth of the company's customers.

*(Source: Research Interview 22 September 2011)*

**Company K (Int. 12)**

The company was established in 1988 to acquire Engineering Technology through direct involvement in all aspects of engineering works in the Oil and Gas and non-oil sectors of the Nigerian economy. The company is Nigeria's premier indigenous Engineering Company with the strategic vision of providing basic and detailed engineering, procurement, construction supervision and Project Management services, using state-of-the-art Technology. It was initially a joint venture between a Nigerian Corporation and a foreign firm. Although there are over 400 individuals who work for

the company, only 240 of these are direct employees of the company. The company continuously develop its staff to keep them abreast of technological developments in the industry. Some of the staff development programmes include on-the-job training; short-term courses and seminars; and overseas rotational training. The company has executed many significant projects in the country.

In May 2000, the company was awarded the prestigious ISO 9001 Quality Certificate by Bureau Veritas Quality International (BVQI). This is the first ISO 9001 Quality award to an indigenous engineering company in Nigeria. The Quality Policy of the company is to satisfy and strive to exceed customer requirements through continuous demonstration of quality and active participation of all employees. Among other things, its quality objectives are to implement and ensure continuous compliance to ISO 9001 Quality Management System; to provide work environment that fosters teamwork and gives job satisfaction; to ensure growth of the company and employees through optimum training and empowerment; to guide sub-contractors in achieving the desired quality; and to remain the best indigenous engineering company, providing innovative and effective services to customers. The competitive advantage of the company is embedded in its commitment to personal attention to work, constant technological advancement and continuous improvement. The company recognises its customers as its most important assets and making their needs central to its future development.

*(Sources: Company's website and Research Interview 22 September 2011)*

**Company L (Int. 13)**

Company was incorporated on October 27, 2006 and began operations on January 2, 2007, providing both equipment leasing and logistics services to its clients. As at the time of the interview (23 September, 2011), the staff strength was 100. Initially, it was incorporated under a name called Intelligent Data Limited (IDL). The aims and objectives of IDL were to conduct research for organisations and to use the findings in enhancing the growth of the organisations. In early 2008, the company diversified into equipment leasing operations. The company would identify potential clients in need of equipment for their operations, and thereafter liaised with its banks to raise the capital required to buy the equipment for the organisations or the individuals in need of it, under agreed terms and conditions. Also in 2008, the company metamorphosed

into Equipment Solutions and Logistics Services Limited. Instead of just supplying equipment, the company is now combining it with haulage and logistic functions. As at the time of this interview, the company has haulage contracts with Classic Beverages Nigeria Limited, Flour Mills of Nigeria PLC, Notore Chemical Industries Limited and Honeywell Superfine Foods Limited. At the moment, haulage solution is the major Logistic Service the company provides to these clients by ensuring that their finished products and raw materials are delivered to the specified destinations in a wholesome manner, safely and timely. The company is also offering additional product termed the Equipment Solutions Truck Acquisition and Investment Note to other clients. This is an asset backed debt note issued by the company that guarantees high return on investment and financial freedom to the participating investors. It is structured to allow investors acquire new trucks over a period of four years with minimal financial commitment at inception while earning above market returns on their investments. With the initial investment of 30% of the cost of the truck, the company would secure financing for the truck with its bankers on an equipment leasing platform. These additional new trucks are used to service the haulage contracts with the company's clients while the income generated is used to pay the monthly rentals to the lending bank and monthly interest payments to the investors.

*(Sources: Research Interview (23 September, 2011) and company's website)*

## Appendix D: Qualitative Study Interview Guide

Organisation Code: _____

Introductory Question [establishing rapport]: Sir, please tell me more about your organisation (Probe: number of employees, establishment date, products).

**Section One**

**Organisational Innovation:**

Q1**.** Since the start of this organisation, how has the organisation changed with respect to the following within the last three years?

(i) Changes in business practices

_____
_____

(ii) Organising your workplace

_____
_____

(iii) External relations with suppliers and customers

_____
_____

Q2. How have these changes affected your firm?

_____
_____

Q3. What do you think are responsible for these changes?

_____
_____

Q4. What extra features has your organisation added over time?

_____
_____

**Marketing Innovation:**

Q1. In response to strategic decisions taken by the management, what are the specific changes in your product marketing methods within the last three years?

_____
_____

Q2. How do you increase your products' appeal among the existing and the prospective customers?

_____

_____

Q3. How is/are your product(s) different from other organisations offering similar products?

_____

_____

Q4. What does your organisation do differently to attract customers?

_____

_____

Q5. What actions does your organisation take to ensure it retains its existing customers? Probe: changes in product design and packaging, product promotion and pricing

_____

_____

Q6. Also, how has any of the organisation's product or service changed? If yes, please state the main reasons for each of the changes?

_____

_____

**Section Two:** Organisational Cultural assessment

The Organisational Culture Assessment Instrument (Cameron and Quinn, 1999)
Instructions for completing the Organisational Culture Assessment Instrument (OCAI):

The OCAI consists of six questions. Each question has four alternatives. Divide 100 points among these four alternatives depending on the extent to which each alternative is similar to your own organization. Give a higher number of points to the alternative that is most similar to your organization. For example, in question one, if you think alternative A is very similar to your organization, alternative B and C are somewhat similar, and alternative D is hardly similar at all, you might give 55 points to A, 20 points to B and C, and five points to D. Just be sure your total equals 100 points for each question.

| 1. Dominant Characteristics | | Points |
|---|---|---|
| A | The organization is a very personal place. It is like an extended family. People seem to share a lot of themselves. | |
| B | The organization is a very dynamic entrepreneurial place. People are willing to stick their necks out and take risks. | |
| C | The organization is very results oriented. A major concern is with getting the job done. People are very competitive and achievement-oriented. | |
| D | The organization is a very controlled and structured place. Formal procedures generally govern what people do. | |

| | | |
|---|---|---|
| | Total | 100 |
| 2. Organisational Leadership | | Points |
| A | The leadership in the organization is generally considered to exemplify mentoring, facilitating, or nurturing. | |
| B | The leadership in the organization is generally considered to exemplify entrepreneurship, innovating, or risk taking. | |
| C | The leadership in the organization is generally considered to exemplify a no-nonsense, aggressive, results-oriented focus. | |
| D | The leadership in the organization is generally considered to exemplify coordinating, organizing, or smooth-running efficiency. | |
| | Total | 100 |

| 3. Management of Employees | | Points |
|---|---|---|
| A | The management style in the organization is characterized by teamwork, consensus, and participation. | |
| B | The management style in the organization is characterized by individual risk taking, innovation, freedom, and uniqueness. | |
| C | The management style in the organization is characterized by hard-driving competitiveness, high demands, and achievement. | |
| D | The management style in the organization is characterized by security of employment, conformity, predictability, and stability in relationships | |
| | Total | 100 |

| 4. Organization Glue | | Points |
|---|---|---|
| A | The glue that holds the organization together is loyalty and mutual trust. Commitment to this organization runs high. | |
| B | The glue that holds the organization together is commitment to innovation and development. There is an emphasis on being on the cutting edge. | |
| C | The glue that holds the organization together is emphasis on achievement and goal accomplishment. | |
| D | The glue that holds the organization together is formal rules and policies. Maintaining a smooth-running organization is important. | |
| | Total | 100 |

| 5. Strategic Emphases | | Points |
|---|---|---|
| A | The organization emphasizes human development. High trust, openness, and participation persist. | |
| B | The organization emphasizes acquiring new resources and creating new challenges. Trying new things and prospecting for opportunities are valued. | |
| C | The organization emphasizes competitive actions and achievement. Hitting stretch targets and winning in the marketplace are dominant. | |
| D | The organization emphasizes permanence and stability. Efficiency, control and smooth operations are important. | |
| | Total | 100 |

| 6. Criteria of Success | | Points |
|---|---|---|
| A | The organization defines success on the basis of the development of human resources, teamwork, employee commitment, and concern for people. | |
| B | The organization defines success on the basis of having the most unique or newest products. It is a product leader and innovator. | |
| C | The organization defines success on the basis of winning in the marketplace and outpacing the competition. Competitive market leadership is important. | |
| D | The organization defines success on the basis of efficiency. Dependable delivery, smooth scheduling and low-cost production are critical. | |
| | Total | 100 |

**Section Three: Closing remarks and Appreciation**

Discussion of some aspects of the research and what to do with the data and the output of the research

**Appendix E: Managerial Staff (Cover Letter and Questionnaire)**

Loughborough University

Leicestershire
LE11 3TU, UK

**Wolfson School of Mechanical and Manufacturing Engineering**
**Sustainable Manufacturing Research Group**

Dear Respondent,

**PhD Research Survey (Managerial staff)**

This questionnaire forms part of a PhD research study on the Nigerian small and medium-sized enterprises (SMEs). The overall aim of the research is to develop a framework that promotes the level of employee commitment, customer engagement, effective innovation, organisational growth and continuous survival. The questionnaire consists of four sections requiring about 10 – 15 minutes to complete.

**Section 1: Background Information**

**Section 2: Organisational and Marketing Innovation capabilities**

**Section 3: Meeting the Present and the Future Needs of the Organisation**

**Section 4: Customer Engagement and Overall Performance**

The survey is completed anonymously; no personal data is asked for or retained (no respondent name or address required). Please note that all data collected in this survey will be held anonymously and securely. During data analysis and report presentation, all responses will be anonymised and their sources will be kept confidential in the thesis and in all other publications from this study. The report will not contain the name of any person or organisation involved in this survey.

Many thanks for your time.

Thank you.

Kind regards,

**Oluseyi Moses Ajayi**

**Company Code no**:……..……This company is located in ……State, Nigeria.

This company was established on: ……

**Section 1: Background Information (Managerial Staff)**

**A) Gender:**

Male ☐ Female ☐

**B) Which age range do you belong?**

20 years & below ☐ 41 – 50 years ☐

21 – 30 years ☐ years & above ☐

31 – 40 years ☐

**C) I have been working in this organisation for:**

0 – 1 year ☐ 11– 15 years ☐

2 – 5 years ☐ 16 years & above ☐

6 – 10 years ☐

**D) I worked in other organisation(s) before joining my present organisation for:**

This is my first job ☐ 11 –15 years ☐

1 – 5 years ☐ 16 years & above ☐

6 – 10 ☐

**E) Number of employees in my organisation is:**

1 – 9 ☐ 101 – 250 ☐

10 – 50 ☐ 251 - 300 ☐

51-100 ☐ Over 300 ☐

**F) Which of the following education qualification do you have? Please select all applicable qualifications.**

Craftsmanship Certificate ☐ Bachelor Degree ☐

WAEC / SSCE / GCE / NECO ☐ Masters Degree ☐

Ordinary National Diploma (OND) ☐ Doctoral degree ☐

Higher National Diploma (HND) ☐ Professional Qualifications ☐

Please state the professional qualification(s):……

## Section 2: Organisational and Marketing Innovation capabilities

This section examines management's strategic decisions that surround the implementation of new organisational methods and new marketing methods. Using the five-point scale below, please circle a response that best represents the extent to which you agree to each of the statements below.

### PART A

| **To what extent do you agree with the following statements? In the last 3 years, my organisation:** | Not at all | Little extent | Some extent | Great extent | Very great extent |
|---|---|---|---|---|---|
| Implemented new methods that improve flexibility of production or service provision. | 1 | 2 | 3 | 4 | 5 |
| Encouraged new methods that increased capacity of production. | 1 | 2 | 3 | 4 | 5 |
| Implemented methods that facilitated reduction in labour costs. | 1 | 2 | 3 | 4 | 5 |
| Implemented methods that encouraged energy and materials saving in its operation. | 1 | 2 | 3 | 4 | 5 |
| Implemented methods that improved the working conditions. | 1 | 2 | 3 | 4 | 5 |
| Implemented methods that reduced production time. | 1 | 2 | 3 | 4 | 5 |
| Improved communication and interaction among different units. | 1 | 2 | 3 | 4 | 5 |
| Renewed its supply chain management system. | 1 | 2 | 3 | 4 | 5 |
| Introduced techniques that improved the quality of its operations. | 1 | 2 | 3 | 4 | 5 |
| Introduced techniques that improved the quality of its products or services. | 1 | 2 | 3 | 4 | 5 |

### PART B

| **To what extent do you agree with the following statements? In the last 3 years, my organisation:** | Not at all | Little extent | Some extent | Great extent | Very great extent |
|---|---|---|---|---|---|
| Implemented creative marketing ideas. | 1 | 2 | 3 | 4 | 5 |
| Implemented improvements that promoted its products or services to its customers. | 1 | 2 | 3 | 4 | 5 |
| Penalised staff for new marketing ideas that did not work. | 1 | 2 | 3 | 4 | 5 |
| Implemented improvements in product pricing. | 1 | 2 | 3 | 4 | 5 |
| Viewed new marketing ideas as too risky. | 1 | 2 | 3 | 4 | 5 |
| Made conscious effort to enter new markets. | 1 | 2 | 3 | 4 | 5 |
| Resisted new marketing ideas. | 1 | 2 | 3 | 4 | 5 |
| Readily accepted improvements in product promotional activities. | 1 | 2 | 3 | 4 | 5 |
| Experienced an increase in different client demands for its products or services. | 1 | 2 | 3 | 4 | 5 |
| Ensured continuous exposure for its products among potential customers. | 1 | 2 | 3 | 4 | 5 |
| Maintained cordial relationships with its customers. | 1 | 2 | 3 | 4 | 5 |
| Repackaged its existing products or services to make them more appealing to its customers. | 1 | 2 | 3 | 4 | 5 |
| Implemented methods that increased the efficiency of delivering goods or services. | 1 | 2 | 3 | 4 | 5 |

## Section 3: Meeting the Present and the Future Needs of the Organisation

This section focuses on measuring how the organisation balances its resources between two groups of activities: *First group*- meeting the present needs of the organisation and *Second group*- supporting the future needs and continuous survival of the organisation.

### PART A (Organisational Level)

| **Please rate to what extent over the last 3 years your organisation:** | Not at all | Little extent | Some extent | Great extent | Very great extent |
|---|---|---|---|---|---|
| Look for novel ideas by thinking "outside the box". | 1 | 2 | 3 | 4 | 5 |
| Base its success on its ability to explore new technologies. | 1 | 2 | 3 | 4 | 5 |
| Create products that are innovative to the company. | 1 | 2 | 3 | 4 | 5 |
| Look for creative ways to satisfy its customers' needs. | 1 | 2 | 3 | 4 | 5 |
| Aggressively venture into new market segments. | 1 | 2 | 3 | 4 | 5 |
| Actively target new customer groups. | 1 | 2 | 3 | 4 | 5 |
| Commit to improve product and service quality. | 1 | 2 | 3 | 4 | 5 |
| Continuously improve the reliability of its products. | 1 | 2 | 3 | 4 | 5 |
| Achieve a reduction in production cost due to increase in demand for its products and services. | 1 | 2 | 3 | 4 | 5 |
| Constantly survey existing customers' satisfaction. | 1 | 2 | 3 | 4 | 5 |
| Fine-tune what it offers to keep its current customers satisfied. | 1 | 2 | 3 | 4 | 5 |
| Penetrate more deeply into its existing customer base. | 1 | 2 | 3 | 4 | 5 |

### PART B (Managerial Level)

| **To what extent did <u>YOU</u> engage in work related activities in the last 12 months that can be characterised as follows:** | Not at all | Little extent | Some extent | Great extent | Very great extent |
|---|---|---|---|---|---|
| Searching for new possibilities with respect to products, processes or markets. | 1 | 2 | 3 | 4 | 5 |
| Evaluating diverse options with respect to products, processes or markets. | 1 | 2 | 3 | 4 | 5 |
| Focusing on strong renewal of products or processes. | 1 | 2 | 3 | 4 | 5 |
| Activities of which the associated benefits to your organisation are currently unclear. | 1 | 2 | 3 | 4 | 5 |
| Activities requiring quite some adaptability of you. | 1 | 2 | 3 | 4 | 5 |
| Activities requiring you to learn new skills or knowledge. | 1 | 2 | 3 | 4 | 5 |
| Activities that are not yet in company policy. | 1 | 2 | 3 | 4 | 5 |
| Activities of which a lot of experience has been accumulated by you. | 1 | 2 | 3 | 4 | 5 |
| Activities which you carry out as if it were routine. | 1 | 2 | 3 | 4 | 5 |
| Activities which serve existing customers with existing products. | 1 | 2 | 3 | 4 | 5 |
| Activities of which it is clear to you how to conduct them. | 1 | 2 | 3 | 4 | 5 |
| Activities which primarily focus on achieving short-term goals. | 1 | 2 | 3 | 4 | 5 |
| Activities which you can properly conduct by using your present knowledge. | 1 | 2 | 3 | 4 | 5 |
| Activities which clearly fit into existing company policy. | 1 | 2 | 3 | 4 | 5 |

## Section 4: Customer Engagement and Overall Performance

This set of questions assesses the organisational engagement level with the customers (Part A) and the overall organisational performance (Part B).

### PART A

| **To what extent do you agree with the following statements about your organisation:** | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|---|---|---|---|---|---|
| The company has an established relationship with the customers. | 1 | 2 | 3 | 4 | 5 |
| The company fully understands the needs of the customers. | 1 | 2 | 3 | 4 | 5 |
| There is an open invitation for constructive criticism from the customers. | 1 | 2 | 3 | 4 | 5 |
| The company often receives constructive criticisms from the customers. | 1 | 2 | 3 | 4 | 5 |
| The company follows clients' complaints through to a logical conclusion. | 1 | 2 | 3 | 4 | 5 |
| The company gets new customers via referral from current customers. | 1 | 2 | 3 | 4 | 5 |
| There are evidences that our customers discuss about our business activities with potential customers. | 1 | 2 | 3 | 4 | 5 |
| The management often send messages and greetings to the customers. | 1 | 2 | 3 | 4 | 5 |
| The company provides after sale supports for its customers. | 1 | 2 | 3 | 4 | 5 |
| The company often requests for customer feedback. | 1 | 2 | 3 | 4 | 5 |
| The company receives solicited feedback from the customers. | 1 | 2 | 3 | 4 | 5 |
| The company receives unsolicited feedback from the customers. | 1 | 2 | 3 | 4 | 5 |
| The company meets with the customers to determine their future needs. | 1 | 2 | 3 | 4 | 5 |
| It has been long since we had one-on-one discussion with our key customers. | 1 | 2 | 3 | 4 | 5 |

### PART B

| **To what extent are you satisfied with the following measures in your organisation?** | Not at all | Little extent | Some extent | Great extent | Very great extent |
|---|---|---|---|---|---|
| Sales Performance | 1 | 2 | 3 | 4 | 5 |
| Growth rate of sales | 1 | 2 | 3 | 4 | 5 |
| Achievement of sales target set | 1 | 2 | 3 | 4 | 5 |
| Return on Investment | 1 | 2 | 3 | 4 | 5 |
| Growth of net profit over the last three years | 1 | 2 | 3 | 4 | 5 |
| Overall Profitability | 1 | 2 | 3 | 4 | 5 |

*** End ***

Many thanks for your time.

**Appendix F: Non-managerial Staff (Cover Letter and Questionnaire)**

Loughborough University

Leicestershire
LE11 3TU, UK

**Wolfson School of Mechanical and Manufacturing Engineering**
**Sustainable Manufacturing Research Group**

Dear Respondent,

**PhD Research Survey (Non-managerial staff)**

This questionnaire forms part of a PhD research study on the Nigerian small and medium-sized enterprises (SMEs). The overall aim of the research is to develop a framework that promotes the level of employee commitment, effective innovation, organisational growth and continuous survival. The questionnaire consists of four sections requiring about 10 – 15 minutes to complete.

**Section 1: Background Information**

**Section 2: Employee Immediate Working Environment**

**Section 3: Employee Level of Engagement**

**Section 4: Meeting the Present and the Future Needs of the Organisation**

The survey is completed anonymously; no personal data is asked for or retained (no respondent name or address required). Please note that all data collected in this survey will be held anonymously and securely. During data analysis and report presentation, all responses will be anonymised and their sources will be kept confidential in the thesis and in all other publications from this study. The report will not contain the name of any person or organisation involved in this survey.

Many thanks for your time.

Thank you.

Kind regards,

**Oluseyi Moses Ajayi**

**Section 1: Background Information [Company Code no:……..……]**

**A) Gender**

Male ☐ Female ☐

**B) Which age range do you belong?**

20 years & below ☐ 41 – 50 years ☐

21 – 30 years ☐ years & above ☐

31 – 40 years ☐

**C) 0I have been working in this organisation for:**

0 – 1 year ☐ 11– 15 years ☐

2 – 5 years ☐ 16 years & above ☐

6 – 10 years ☐

**D) I worked in other organisation(s) before joining my present organisation for:**

This is my first job ☐ 11 –15 years ☐

1 – 5 years ☐ 16 years & above ☐

6 – 10 ☐

**E) Which of the following education qualification do you have? Please select all applicable qualifications.**

Craftsmanship Certificate ☐ Bachelor Degree ☐

WAEC / SSCE / GCE / NECO ☐ Masters Degree ☐

Ordinary National Diploma (OND) ☐ Doctoral degree ☐

Higher National Diploma (HND) ☐ Professional Qualifications ☐

Please state the professional qualification(s):……..

## Section 2: Employee Working Environment

This section examines the internal working environment in your organisation. Using the five-point scale below, please circle a response that best represents the extent to which you agree to each of the statements below.

**PART A**

| **In general, my company:** | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|---|---|---|---|---|---|
| Encourages open channels of communication between the staff and the management. | 1 | 2 | 3 | 4 | 5 |
| Promotes information sharing among the employees. | 1 | 2 | 3 | 4 | 5 |
| Allows me to apply my initiatives as circumstances demand. | 1 | 2 | 3 | 4 | 5 |
| Encourages making the best decisions even if it requires bypassing formal rules temporarily. | 1 | 2 | 3 | 4 | 5 |
| Ensures employees stick to formally laid down procedures. | 1 | 2 | 3 | 4 | 5 |
| Encourages employee participation in the decision making process. | 1 | 2 | 3 | 4 | 5 |
| Sticks firmly to its past methods of operations. | 1 | 2 | 3 | 4 | 5 |
| Encourages operating styles that range freely from the very formal to the very informal. | 1 | 2 | 3 | 4 | 5 |

**PART B**

| **To what extent do you agree with the following statements?** | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|---|---|---|---|---|---|
| My company is like an extended family where I feel free to discuss my personal issues. | 1 | 2 | 3 | 4 | 5 |
| I see my leader as a mentor. | 1 | 2 | 3 | 4 | 5 |
| The company encourages the employees to work as a team. | 1 | 2 | 3 | 4 | 5 |
| Group loyalty holds this company together. | 1 | 2 | 3 | 4 | 5 |
| There is a strong concern for employee growth and development in this company. | 1 | 2 | 3 | 4 | 5 |

| PART C | | | | | |
|---|---|---|---|---|---|
| **To what extent do you agree with the following statements?** | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
| The company is a very creative place to work. | 1 | 2 | 3 | 4 | 5 |
| The leadership in this company encourages learning new things. | 1 | 2 | 3 | 4 | 5 |
| The leadership in this company encourages doing things that lack immediate benefits. | 1 | 2 | 3 | 4 | 5 |
| The management style in the company is characterised by individual risk taking | 1 | 2 | 3 | 4 | 5 |
| Commitment to creativity holds this company together. | 1 | 2 | 3 | 4 | 5 |
| Emphasis is on producing unique and new products. | 1 | 2 | 3 | 4 | 5 |

**PART D**

| **To what extent do you agree with the following statements?** | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|---|---|---|---|---|---|
| Knowledge is widely shared in this company. | 1 | 2 | 3 | 4 | 5 |
| This company emphasises openness among the employees. | 1 | 2 | 3 | 4 | 5 |
| Mutual trust is very important in this company. | 1 | 2 | 3 | 4 | 5 |
| Respect among the employees is very important in this company. | 1 | 2 | 3 | 4 | 5 |

## Section 3: Employee Level of Engagement

This set of questions assesses the engagement level of the employees.

| **Please circle the response that best indicates your extent of agreement for each statement** | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|---|---|---|---|---|---|
| I am personally proud of my company. | 1 | 2 | 3 | 4 | 5 |
| I am not totally satisfied with every activity in my company. | 1 | 2 | 3 | 4 | 5 |
| I am satisfied with every activity that relates to my job. | 1 | 2 | 3 | 4 | 5 |
| I have the opportunity to perform well at my work. | 1 | 2 | 3 | 4 | 5 |
| I do not always receive praise and positive feedback for my contributions. | 1 | 2 | 3 | 4 | 5 |
| I do not have enough personal | 1 | 2 | 3 | 4 | 5 |

| | | | | | |
|---|---|---|---|---|---|
| support from my supervisor. | | | | | |
| My effort is always far above and beyond the minimum. | 1 | 2 | 3 | 4 | 5 |
| I understand the links between my job and the company's goals. | 1 | 2 | 3 | 4 | 5 |
| My prospect for future growth with this company is high. | 1 | 2 | 3 | 4 | 5 |
| I do not have any intention to stay with this company for long time. | 1 | 2 | 3 | 4 | 5 |
| Sometimes I think of other things when doing my job. | 1 | 2 | 3 | 4 | 5 |
| Sometimes I am so engrossed by job that I lose track of time. | 1 | 2 | 3 | 4 | 5 |

## Section 4: Meeting the Present and the Future Needs of the Organisation

This section focuses on measuring the ability of the employees to effectively identify and combine two groups of activities: the present needs and the future needs of the organisation.

**PART A:** Within the last one year, how many changes have you proposed to the following aspects of the company?

| | **Number of Changes You Proposed Within the last one year on:** | | | | |
|---|---|---|---|---|---|
| New targets or objectives. | None | 1 -2 | 3 – 5 | 6 -10 | 11+ |
| New working methods or techniques. | None | 1 -2 | 3 – 5 | 6 -10 | 11+ |
| New products or product improvements. | None | 1 -2 | 3 – 5 | 6 -10 | 11+ |
| New methods to achieve work targets. | None | 1 -2 | 3 – 5 | 6 -10 | 11+ |
| New information to any aspect of your work. | None | 1 -2 | 3 – 5 | 6 -10 | 11+ |

**PART B:** Within the last one year, how many of your proposed changes indicated in Part A has been implemented?

| | **Number of Your Proposed Changes Implemented Within the last one year on:** | | | | |
|---|---|---|---|---|---|
| New targets or objectives. | None | 1 -2 | 3 – 5 | 6 -10 | 11+ |
| New working methods or techniques. | None | 1 -2 | 3 – 5 | 6 -10 | 11+ |
| New products or product improvements. | None | 1 -2 | 3 – 5 | 6 -10 | 11+ |
| New methods to achieve work targets. | None | 1 -2 | 3 – 5 | 6 -10 | 11+ |
| New information to any aspect of your work. | None | 1 -2 | 3 – 5 | 6 -10 | 11+ |

**PART C**

**1a) Within the last one year, have you <u>personally</u> searched for new and better ways of doing your job?**

Yes ☐ No ☐

If **No**, please go to question 2a. If **Yes**, please go to question 1b.

1b) To what extent?

| Little Extent | Some Extent | Great Extent | Very Great Extent |
|---|---|---|---|
| 1 | 2 | 3 | 4 |

1c) Has this activity been of any benefit to this company? Yes ☐ No ☐

If **No**, please go to question 2a. If **Yes**, please go to question 1d.

1d) To what extent?

| Little Extent | Some Extent | Great Extent | Very Great Extent |
|---|---|---|---|
| 1 | 2 | 3 | 4 |

**2a) Within the last one year, have you <u>personally</u> engaged in activities that need you to change the way you work?**

Yes ☐ No ☐

If **No**, please go to question 3a. If **Yes**, please go to question 2b.

2b) To what extent?

| Little Extent | Some Extent | Great Extent | Very Great Extent |
|---|---|---|---|
| 1 | 2 | 3 | 4 |

2c) Has this activity been of any benefit to this company? Yes ☐ No ☐

If **No**, please go to question 3a. If **Yes**, please go to question 2d.

2d) To what extent?

| Little Extent | Some Extent | Great Extent | Very Great Extent |
|---|---|---|---|
| 1 | 2 | 3 | 4 |

3a) **Within the last one year, have you undertaken activities that need you to learn new skills or gain knowledge?**

Yes ☐ No ☐

If **No**, please go to question 4a. If **Yes**, please go to question 3b.

3b) To what extent?

| Little Extent | Some Extent | Great Extent | Very Great Extent |
|---|---|---|---|
| 1 | 2 | 3 | 4 |

3c) Has this activity been of any benefit to this company? Yes ☐ No ☐

If **No**, please go to question 4a. If **Yes**, please go to question 3d.

3d) To what extent?

| Little Extent | Some Extent | Great Extent | Very Great Extent |
|---|---|---|---|
| 1 | 2 | 3 | 4 |

4a) **Within the last one year, have you <u>personally</u> identified way(s) to do your work better?**

Yes ☐ No ☐

If **Yes**, please go to question 4b.

4b) To what extent?

| Little Extent | Some Extent | Great Extent | Very Great Extent |
|---|---|---|---|
| 1 | 2 | 3 | 4 |

4c) Has this activity been of any benefit to this company? Yes ☐ No ☐

If **Yes**, please go to question 4d.

4d) To what extent?

| Little Extent | Some Extent | Great Extent | Very Great Extent |
|---|---|---|---|
| 1 | 2 | 3 | 4 |

*** End ***

Many thanks for your time.

## Appendix G: Reliability Analyses of Items and Constructs in Managerial Survey

### Organisational Innovation

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .726 | .738 | 10 |

**Item-Total Statistics**

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Squared Multiple Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|---|
| Q1_b | 31.41 | 17.020 | .477 | .594 | .691 |
| Q1_c | 31.33 | 15.385 | .699 | .728 | .653 |
| Q1_d | 31.74 | 17.353 | .256 | .248 | .730 |
| Q1_e | 31.67 | 18.154 | .255 | .461 | .723 |
| Q1_f | 31.74 | 16.353 | .411 | .339 | .700 |
| Q1_g | 32.07 | 16.840 | .322 | .305 | .718 |
| Q1_h | 31.59 | 17.328 | .427 | .558 | .699 |
| Q1_i | 32.19 | 17.849 | .284 | .536 | .720 |
| Q1_j | 31.59 | 17.251 | .440 | .605 | .697 |
| Q1_k | 31.33 | 17.923 | .389 | .469 | .705 |

### Marketing Innovation

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .843 | .842 | 13 |

**Item-Total Statistics**

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Squared Multiple Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|---|
| Q2_a | 44.6296 | 38.934 | .806 | .869 | .808 |
| Q2_b | 44.6296 | 41.473 | .686 | .785 | .819 |
| Q2_d | 45.2963 | 43.986 | .391 | .542 | .840 |
| Q2_f | 44.6667 | 42.231 | .526 | .824 | .830 |
| Q2_h | 44.7778 | 43.641 | .581 | .591 | .827 |
| Q2_i | 44.6296 | 42.396 | .638 | .812 | .823 |
| Q2_j | 44.7407 | 49.276 | .047 | .364 | .857 |
| Q2_k | 44.1481 | 45.439 | .464 | .793 | .835 |
| Q2_l | 44.9259 | 41.379 | .654 | .778 | .821 |
| Q2_m | 44.3704 | 43.011 | .621 | .824 | .825 |
| Q2_cR | 43.9630 | 48.191 | .122 | .460 | .855 |
| Q2_eR | 44.5185 | 44.182 | .370 | .717 | .842 |
| Q2_gR | 44.2593 | 41.969 | .564 | .664 | .827 |

## Organisational Ambidexterity (Exploration Capability)

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .755 | .761 | 6 |

**Item-Total Statistics**

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Squared Multiple Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|---|
| Q10_a | 18.67 | 12.788 | .334 | .474 | .758 |
| Q10_b | 18.83 | 11.424 | .674 | .848 | .683 |
| Q10_c | 18.50 | 12.636 | .398 | .870 | .743 |
| Q10_d | 18.33 | 10.061 | .610 | .748 | .685 |
| Q10_e | 18.83 | 10.515 | .504 | .482 | .720 |
| Q10_f | 18.50 | 11.182 | .502 | .799 | .718 |

## Organisational Ambidexterity (Exploitation Capability)

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .805 | .839 | 6 |

**Item-Total Statistics**

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Squared Multiple Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|---|
| Q10_g | 19.58 | 11.720 | .819 | .852 | .730 |
| Q10_h | 19.83 | 11.970 | .647 | .798 | .758 |
| Q10_i | 20.17 | 9.788 | .565 | .681 | .795 |
| Q10_j | 19.92 | 12.992 | .301 | .589 | .840 |
| Q10_k | 19.83 | 12.515 | .661 | .633 | .761 |
| Q10_l | 19.83 | 12.515 | .661 | .530 | .761 |

## Manager’s Ambidexterity (Exploration Capability)

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .738 | .706 | 7 |

**Item-Total Statistics**

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Squared Multiple Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|---|
| Q11_a | 20.92 | 16.811 | .494 | .837 | .697 |
| Q11_b | 21.33 | 15.152 | .740 | .964 | .636 |
| Q11_c | 20.83 | 16.515 | .554 | .863 | .683 |
| Q11_d | 22.00 | 16.182 | .502 | .778 | .694 |
| Q11_e | 20.92 | 20.447 | .247 | .907 | .743 |
| Q11_f | 20.83 | 22.152 | -.028 | .880 | .785 |
| Q11_g | 21.67 | 13.879 | .614 | .888 | .663 |

## Manager’s Ambidexterity (Exploitation Capability)

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .741 | .742 | 7 |

**Item-Total Statistics**

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Squared Multiple Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|---|
| Q11_h | 23.67 | 10.061 | .456 | .928 | .710 |
| Q11_i | 24.08 | 9.174 | .447 | .680 | .715 |
| Q11_j | 23.25 | 9.659 | .591 | .853 | .683 |
| Q11_k | 23.42 | 9.720 | .445 | .906 | .713 |
| Q11_l | 23.58 | 10.992 | .274 | .934 | .746 |
| Q11_m | 23.33 | 8.242 | .625 | .959 | .664 |
| Q11_n | 23.17 | 10.879 | .377 | .431 | .727 |

## Customer Engagement

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .809 | .839 | 14 |

**Item-Total Statistics**

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|
| Q12_a | 49.9167 | 47.174 | .474 | .795 |
| Q12_b | 50.0833 | 47.902 | .544 | .794 |
| Q12_c | 50.3333 | 43.152 | .811 | .771 |
| Q12_d | 50.6667 | 47.152 | .359 | .803 |
| Q12_e | 50.3333 | 47.879 | .445 | .798 |
| Q12_f | 50.3333 | 44.788 | .772 | .778 |
| Q12_g | 50.1667 | 49.788 | .211 | .812 |
| Q12_h | 50.4167 | 50.629 | .152 | .815 |
| Q12_i | 51.2500 | 49.841 | .063 | .838 |
| Q12_j | 50.4167 | 41.356 | .749 | .769 |
| Q12_k | 50.5833 | 42.447 | .763 | .771 |
| Q12_l | 50.8333 | 45.424 | .328 | .811 |
| Q12_m | 50.5000 | 44.636 | .685 | .781 |
| Q12_nR | 50.5000 | 46.636 | .273 | .815 |

## Organisational Performance

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .948 | .956 | 6 |

**Item-Total Statistics**

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Squared Multiple Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|---|
| Q13_a | 18.17 | 20.515 | .808 | .807 | .942 |
| Q13_b | 18.08 | 20.811 | .903 | .952 | .933 |
| Q13_c | 18.17 | 19.061 | .906 | .902 | .930 |
| Q13_d | 18.25 | 19.477 | .702 | .794 | .962 |
| Q13_e | 18.25 | 19.477 | .936 | .937 | .927 |
| Q13_f | 18.25 | 21.477 | .897 | .897 | .936 |

## Appendix H: Reliability Analyses of Items and Constructs in Shop floor Survey

### Organic Structure

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .732 | .729 | 8 |

**Item-Total Statistics**

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Squared Multiple Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|---|
| Q3_a | 22.4074 | 15.405 | .594 | .770 | .676 |
| Q3_b | 22.4815 | 15.028 | .572 | .767 | .676 |
| Q3_c | 22.8519 | 16.285 | .438 | .370 | .704 |
| Q3_d | 23.5185 | 15.259 | .434 | .540 | .704 |
| Q3_g | 23.2222 | 14.564 | .588 | .517 | .670 |
| Q3_i | 23.3333 | 16.692 | .228 | .473 | .750 |
| Q3_fR | 24.3333 | 19.000 | .070 | .418 | .758 |
| Q3_hR | 23.2222 | 14.641 | .517 | .471 | .685 |

### Clan Culture

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .787 | .804 | 5 |

**Item-Total Statistics**

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Squared Multiple Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|---|
| Q9_a | 15.83 | 7.788 | .432 | .655 | .812 |
| Q9_b | 15.00 | 9.636 | .449 | .242 | .782 |
| Q9_c | 14.75 | 7.659 | .739 | .804 | .691 |
| Q9_d | 14.92 | 8.265 | .714 | .668 | .709 |
| Q9_e | 14.83 | 7.606 | .600 | .842 | .736 |

## Adhocracy Culture

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .882 | .886 | 6 |

**Item-Total Statistics**

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Squared Multiple Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|---|
| Q10_a | 18.00 | 14.333 | .742 | .690 | .853 |
| Q10_b | 17.85 | 15.974 | .773 | .700 | .855 |
| Q10_c | 18.62 | 14.423 | .735 | .817 | .854 |
| Q10_d | 18.77 | 14.026 | .690 | .574 | .865 |
| Q10_e | 18.46 | 14.603 | .772 | .911 | .848 |
| Q10_f | 17.92 | 17.244 | .492 | .886 | .890 |

## Knowledge Sharing Culture

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .835 | .837 | 4 |

**Item-Total Statistics**

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Squared Multiple Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|---|
| Q11_a | 11.75 | 4.386 | .728 | .654 | .767 |
| Q11_b | 11.67 | 5.333 | .682 | .616 | .784 |
| Q11_c | 11.75 | 5.295 | .668 | .551 | .790 |
| Q11_d | 11.08 | 5.902 | .609 | .504 | .816 |

## Shop Floor Employee Level of Engagement

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .852 | .849 | 12 |

**Item-Total Statistics**

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Squared Multiple Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|---|
| Q12_a | 36.5385 | 55.769 | .790 | .877 | .823 |
| Q12_c | 37.2308 | 57.192 | .628 | .981 | .834 |
| Q12_d | 36.9231 | 58.744 | .536 | .955 | .840 |
| Q12_g | 36.8462 | 64.141 | .319 | .938 | .853 |
| Q12_h | 36.8462 | 60.974 | .571 | .848 | .840 |
| Q12_i | 37.0769 | 63.244 | .193 | .897 | .868 |
| Q12_l | 37.3077 | 65.064 | .205 | .678 | .860 |
| Q12_bR | 38.0000 | 52.167 | .792 | .979 | .819 |
| Q12_eR | 37.5385 | 63.103 | .268 | .854 | .858 |
| Q12_fR | 37.1538 | 53.308 | .721 | .944 | .825 |
| Q12_jR | 37.5385 | 51.436 | .840 | .931 | .814 |
| Q12_kR | 37.7692 | 60.859 | .471 | .957 | .845 |

## CIA (Suggestion-Implementation Orientation)-Exploration

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .910 | .912 | 5 |

**Item-Total Statistics**

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Squared Multiple Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|---|
| Q13_a | 9.46 | 14.769 | .755 | .739 | .894 |
| Q13_b | 9.46 | 14.603 | .856 | .754 | .873 |
| Q13_c | 10.00 | 16.167 | .576 | .751 | .929 |
| Q13_d | 9.46 | 14.436 | .882 | .969 | .868 |
| Q13_e | 9.31 | 13.897 | .816 | .966 | .881 |

## CIA (Suggestion-Implementation Orientation)-Exploitation

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .891 | .891 | 5 |

**Item-Total Statistics**

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Squared Multiple Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|---|
| Q14_a | 7.85 | 9.474 | .949 | .932 | .819 |
| Q14_b | 7.77 | 10.526 | .781 | .854 | .859 |
| Q14_c | 8.23 | 12.692 | .431 | .345 | .924 |
| Q14_d | 7.77 | 9.026 | .888 | .818 | .830 |
| Q14_e | 7.77 | 9.692 | .678 | .826 | .887 |

## CIA (Employee Personal Development Strategy and its Organisational Relevance) – Exploration

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .724 | .729 | 4 |

**Item-Total Statistics**

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Squared Multiple Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|---|
| Q15_a | 5.31 | 10.564 | .437 | .328 | .706 |
| Q16_a | 5.92 | 9.244 | .442 | .438 | .705 |
| Q17_a | 5.46 | 7.436 | .560 | .455 | .641 |
| Q18_a | 5.46 | 8.603 | .657 | .544 | .583 |

## CIA (Employee Personal Development Strategy and its Organisational Relevance) – Exploitation

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .864 | .867 | 4 |

**Item-Total Statistics**

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Squared Multiple Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|---|
| Q15_b_i | 4.54 | 11.269 | .603 | .529 | .870 |
| Q16_b_i | 4.69 | 9.731 | .859 | .833 | .765 |
| Q17_b_i | 4.46 | 10.769 | .626 | .433 | .864 |
| Q18_b_i | 4.31 | 10.564 | .786 | .787 | .799 |

## Combined CIA – Exploration

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .714 | .741 | 9 |

**Item-Total Statistics**

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Squared Multiple Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|---|
| Q13_a | 20.8462 | 29.141 | .383 | .848 | .690 |
| Q13_b | 20.8462 | 27.974 | .539 | .766 | .665 |
| Q13_c | 21.3846 | 29.923 | .319 | .815 | .701 |
| Q13_d | 20.8462 | 26.308 | .711 | .977 | .634 |
| Q13_e | 20.6923 | 25.064 | .718 | .978 | .624 |
| Q15_aN | 20.2308 | 27.526 | .593 | .751 | .656 |
| Q16_aN | 20.8462 | 28.641 | .327 | .664 | .702 |
| Q17_aN | 20.3846 | 30.423 | .130 | .629 | .752 |
| Q18_aN | 20.3846 | 33.256 | .029 | .761 | .751 |

## Combined CIA – Exploitation

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .848 | .854 | 9 |

**Item-Total Statistics**

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Squared Multiple Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|---|
| Q14_a | 17.8462 | 35.641 | .688 | .977 | .823 |
| Q14_b | 17.7692 | 35.526 | .750 | .941 | .819 |
| Q14_c | 18.2308 | 41.359 | .205 | .759 | .860 |
| Q14_d | 17.7692 | 33.692 | .764 | .944 | .812 |
| Q14_e | 17.7692 | 36.526 | .460 | .875 | .843 |
| Q15_b_iN | 17.3846 | 31.756 | .744 | .958 | .811 |
| Q16_b_iN | 17.5385 | 33.436 | .620 | .957 | .826 |
| Q17_b_iN | 17.3077 | 36.397 | .362 | .734 | .859 |
| Q18_b_iN | 17.1538 | 34.308 | .597 | .904 | .829 |

# Appendix I: Non-Response Bias Analysis for Managerial Staff Online Survey

| | Company type | Company Location | Manager Gender |
|---|---|---|---|
| Mann-Whitney U | 200.000 | 163.500 | 190.000 |
| Wilcoxon W | 410.000 | 373.500 | 400.000 |
| Z | .000 | -1.117 | -.411 |
| Asymp. Sig. (2-tailed) | 1.000 | .264 | .681 |
| Exact Sig. [2*(1-tailed Sig.)] | 1.000[a] | .327[a] | .799[a] |

| | Size | Manager Highest Qualications | Professional Qualifications |
|---|---|---|---|
| Mann-Whitney U | 117.500 | 149.000 | 190.000 |
| Wilcoxon W | 327.500 | 359.000 | 400.000 |
| Z | -2.764 | -1.630 | -.350 |
| Asymp. Sig. (2-tailed) | .006 | .103 | .727 |
| Exact Sig. [2*(1-tailed Sig.)] | .024[a] | .174[a] | .799[a] |

a. Not corrected for ties.
b. Grouping Variable: Non Response Bias (Early Respondents and Late Respondents)

**Test Statistics[b]**

| | Org_Inno_1 | Org_Inno_2 | Org_Inno_3 | Org_Inno_4 | Org_Inno_5 |
|---|---|---|---|---|---|
| Mann-Whitney U | 199.500 | 185.500 | 169.000 | 142.000 | 181.500 |
| Wilcoxon W | 409.500 | 395.500 | 379.000 | 352.000 | 391.500 |
| Z | -.015 | -.439 | -.906 | -1.670 | -.536 |
| Asymp. Sig. (2-tailed) | .988 | .661 | .365 | .095 | .592 |
| Exact Sig. [2*(1-tailed Sig.)] | .989[a] | .698[a] | .414[a] | .121[a] | .620[a] |

a. Not corrected for ties.
b. Grouping Variable: Non Response Bias (Early Respondents and Late Respondents)

**Test Statistics[b]**

| | Org_Inno_6 | Org_Inno_7 | Org_Inno_8 | Org_Inno_9 | Org_Inno_10 |
|---|---|---|---|---|---|
| Mann-Whitney U | 195.000 | 194.000 | 134.000 | 161.500 | 189.000 |
| Wilcoxon W | 405.000 | 404.000 | 344.000 | 371.500 | 399.000 |
| Z | -.141 | -.183 | -2.030 | -1.236 | -.362 |
| Asymp. Sig. (2-tailed) | .888 | .854 | .042 | .216 | .718 |
| Exact Sig. [2*(1-tailed Sig.)] | .904[a] | .883[a] | .076[a] | .301[a] | .779[a] |

a. Not corrected for ties.

b. Grouping Variable: Non Response Bias (Early Respondents and Late Respondents)

**Test Statistics[b]**

| | Mar_Inno_1 | Mar_Inno_2 | Mar_Inno_3 | Mar_Inno_4 | Mar_Inno_5 |
|---|---|---|---|---|---|
| Mann-Whitney U | 167.500 | 182.000 | 176.000 | 148.500 | 172.000 |
| Wilcoxon W | 377.500 | 392.000 | 386.000 | 358.500 | 382.000 |
| Z | -.945 | -.532 | -.673 | -1.528 | -.785 |
| Asymp. Sig. (2-tailed) | .345 | .595 | .501 | .127 | .432 |
| Exact Sig. [2*(1-tailed Sig.)] | .383[a] | .640[a] | .529[a] | .165[a] | .461[a] |

a. Not corrected for ties.

b. Grouping Variable: Non Response Bias (Early Respondents and Late Respondents)

**Test Statistics[b]**

| | Mar_Inno_6 | Mar_Inno_7 | Mar_Inno_8 | Mar_Inno_9 | Mar_Inno_10 |
|---|---|---|---|---|---|
| Mann-Whitney U | 163.500 | 161.000 | 195.500 | 157.000 | 198.000 |
| Wilcoxon W | 373.500 | 371.000 | 405.500 | 367.000 | 408.000 |
| Z | -1.131 | -1.082 | -.133 | -1.409 | -.060 |
| Asymp. Sig. (2-tailed) | .258 | .279 | .895 | .159 | .952 |
| Exact Sig. [2*(1-tailed Sig.)] | .327[a] | .301[a] | .904[a] | .253[a] | .968[a] |

a. Not corrected for ties.

b. Grouping Variable: Non Response Bias (Early Respondents and Late Respondents)

**Test Statistics[b]**

| | Mar_Inno_11 | Mar_Inno_12 | Mar_Inno_13 |
|---|---|---|---|
| Mann-Whitney U | 175.500 | 159.500 | 166.500 |
| Wilcoxon W | 385.500 | 369.500 | 376.500 |
| Z | -.740 | -1.244 | -1.000 |
| Asymp. Sig. (2-tailed) | .459 | .213 | .317 |
| Exact Sig. [2*(1-tailed Sig.)] | .512[a] | .277[a] | .369[a] |

a. Not corrected for ties.

b. Grouping Variable: Non Response Bias (Early Respondents and Late Respondents)

**Test Statistics[b]**

| | OA_Explore1 | OA_Explore2 | OA_Explore3 | OA_Explore4 | OA_Explore5 | OA_Explore6 |
|---|---|---|---|---|---|---|
| Mann-Whitney U | 191.500 | 191.000 | 175.500 | 179.000 | 170.500 | 174.000 |
| Wilcoxon W | 401.500 | 401.000 | 385.500 | 389.000 | 380.500 | 384.000 |
| Z | -.239 | -.254 | -.691 | -.604 | -.840 | -.744 |
| Asymp. Sig. (2-tailed) | .811 | .800 | .490 | .546 | .401 | .457 |
| Exact Sig. [2*(1-tailed Sig.)] | .820[a] | .820[a] | .512[a] | .583[a] | .429[a] | .495[a] |

a. Not corrected for ties.

b. Grouping Variable: Non Response Bias (Early Respondents and Late Respondents)

**Test Statistics[b]**

| | OA_Exploit1 | OA_Exploit2 | OA_Exploit3 | OA_Exploit4 | OA_Exploit5 | OA_Exploit6 |
|---|---|---|---|---|---|---|
| Mann-Whitney U | 171.000 | 145.000 | 191.000 | 199.000 | 187.000 | 159.000 |
| Wilcoxon W | 381.000 | 355.000 | 401.000 | 409.000 | 397.000 | 369.000 |
| Z | -.870 | -1.631 | -.252 | -.029 | -.380 | -1.173 |
| Asymp. Sig. (2-tailed) | .384 | .103 | .801 | .977 | .704 | .241 |
| Exact Sig. [2*(1-tailed Sig.)] | .445[a] | .142[a] | .820[a] | .989[a] | .738[a] | .277[a] |

a. Not corrected for ties.

b. Grouping Variable: Non Response Bias (Early Respondents and Late Respondents)

**Test Statistics[b]**

| | MA_Explore1 | MA_Explore2 | MA_Explore3 | MA_Explore4 | MA_Explore5 | MA_Explore6 | MA_Explore7 |
|---|---|---|---|---|---|---|---|
| Mann-Whitney U | 190.500 | 193.000 | 164.500 | 190.000 | 189.000 | 162.000 | 165.000 |
| Wilcoxon W | 400.500 | 403.000 | 374.500 | 400.000 | 399.000 | 372.000 | 375.000 |
| Z | -.269 | -.198 | -1.007 | -.281 | -.313 | -1.122 | -.984 |
| Asymp. Sig. (2-tailed) | .788 | .843 | .314 | .779 | .755 | .262 | .325 |
| Exact Sig. [2*(1-tailed Sig.)] | .799[a] | .862[a] | .341[a] | .799[a] | .779[a] | .314[a] | .355[a] |

a. Not corrected for ties.

b. Grouping Variable: Non Response Bias (Early Respondents and Late Respondents)

**Test Statistics[b]**

| | MA_Exploit1 | MA_Exploit2 | MA_Exploit3 | MA_Exploit4 | MA_Exploit5 | MA_Exploit6 | MA_Exploit7 |
|---|---|---|---|---|---|---|---|
| Mann-Whitney U | 138.500 | 127.000 | 129.500 | 113.000 | 189.500 | 176.000 | 148.000 |
| Wilcoxon W | 348.500 | 337.000 | 339.500 | 323.000 | 399.500 | 386.000 | 358.000 |
| Z | -1.743 | -2.051 | -2.007 | -2.499 | -.300 | -.700 | -1.519 |
| Asymp. Sig. (2-tailed) | .081 | .040 | .045 | .012 | .764 | .484 | .129 |
| Exact Sig. [2*(1-tailed Sig.)] | .096[a] | .049[a] | .056[a] | .018[a] | .779[a] | .529[a] | .165[a] |

a. Not corrected for ties.

b. Grouping Variable: Non Response Bias (Early Respondents and Late Respondents)

**Test Statistics[b]**

| | Cstmer_E1 | Cstmer_E2 | Cstmer_E3 | Cstmer_E4 | Cstmer_E5 |
|---|---|---|---|---|---|
| Mann-Whitney U | 196.000 | 171.500 | 174.500 | 174.000 | 167.000 |
| Wilcoxon W | 406.000 | 381.500 | 384.500 | 384.000 | 377.000 |
| Z | -.122 | -.886 | -.808 | -.750 | -.979 |
| Asymp. Sig. (2-tailed) | .903 | .376 | .419 | .453 | .328 |
| Exact Sig. [2*(1-tailed Sig.)] | .925[a] | .445[a] | .495[a] | .495[a] | .383[a] |

a. Not corrected for ties.

b. Grouping Variable: Non Response Bias (Early Respondents and Late Respondents)

**Test Statistics[b]**

| | Cstmer_E6 | Cstmer_E7 | Cstmer_E8 | Cstmer_E9 | Cstmer_E10 |
|---|---|---|---|---|---|
| Mann-Whitney U | 158.000 | 140.500 | 145.000 | 160.000 | 192.500 |
| Wilcoxon W | 368.000 | 350.500 | 355.000 | 370.000 | 402.500 |
| Z | -1.262 | -1.757 | -1.577 | -1.181 | -.218 |
| Asymp. Sig. (2-tailed) | .207 | .079 | .115 | .238 | .827 |
| Exact Sig. [2*(1-tailed Sig.)] | .265[a] | .108[a] | .142[a] | .289[a] | .841[a] |

a. Not corrected for ties.

b. Grouping Variable: Non Response Bias (Early Respondents and Late Respondents)

**Test Statistics[b]**

| | Cstmer_E11 | Cstmer_E12 | Cstmer_E13 | Cstmer_E14 |
|---|---|---|---|---|
| Mann-Whitney U | 185.500 | 172.500 | 189.000 | 191.000 |
| Wilcoxon W | 395.500 | 382.500 | 399.000 | 401.000 |
| Z | -.421 | -.786 | -.316 | -.249 |
| Asymp. Sig. (2-tailed) | .674 | .432 | .752 | .803 |
| Exact Sig. [2*(1-tailed Sig.)] | .698[a] | .461[a] | .779[a] | .820[a] |

a. Not corrected for ties.

b. Grouping Variable: Non Response Bias (Early Respondents and Late Respondents)

**Test Statistics[b]**

| | Sales Performance | Growth rate of sales | Achievement of sales target set | Return on Investment | Growth of net profit over the last three years | Overall Profitability |
|---|---|---|---|---|---|---|
| Mann-Whitney U | 187.000 | 191.500 | 198.500 | 197.500 | 181.500 | 152.500 |
| Wilcoxon W | 397.000 | 401.500 | 408.500 | 407.500 | 391.500 | 362.500 |
| Z | -.375 | -.253 | -.045 | -.073 | -.557 | -1.372 |
| Asymp. Sig. (2-tailed) | .708 | .800 | .964 | .942 | .577 | .170 |
| Exact Sig. [2*(1-tailed Sig.)] | .738[a] | .820[a] | .968[a] | .947[a] | .620[a] | .201[a] |

a. Not corrected for ties.

b. Grouping Variable: Non Response Bias (Early Respondents and Late Respondents)

# Appendix J: Non-Response Bias Analysis for Shop-floor Staff Online Survey

**Test Statistics[b]**

| | Compy_Type | Company location | Emp_SexQ2 |
|---|---|---|---|
| Mann-Whitney U | 190.000 | 110.000 | 170.000 |
| Wilcoxon W | 400.000 | 320.000 | 380.000 |
| Z | -1.000 | -2.959 | -1.000 |
| Asymp. Sig. (2-tailed) | .317 | .003 | .317 |
| Exact Sig. [2*(1-tailed Sig.)] | .799[a] | .014[a] | .429[a] |

a. Not corrected for ties.
b. Grouping Variable: Non Response Bias (Early Respondents and Late Respondents)

**Test Statistics[b]**

| | Compy_Size | Employee Highest Qualification | Professional Qualifications |
|---|---|---|---|
| Mann-Whitney U | 190.500 | 173.000 | 190.000 |
| Wilcoxon W | 400.500 | 383.000 | 400.000 |
| Z | -.327 | -.829 | -.593 |
| Asymp. Sig. (2-tailed) | .743 | .407 | .553 |
| Exact Sig. [2*(1-tailed Sig.)] | .799[a] | .478[a] | .799[a] |

a. Not corrected for ties.
b. Grouping Variable: Non Response Bias (Early Respondents and Late Respondents)

**Test Statistics[b]**

| | Organicity1 | Organicity2 | Organicity3 | Organicity4 |
|---|---|---|---|---|
| Mann-Whitney U | 199.500 | 200.000 | 182.500 | 198.500 |
| Wilcoxon W | 409.500 | 410.000 | 392.500 | 408.500 |
| Z | -.015 | .000 | -.529 | -.044 |
| Asymp. Sig. (2-tailed) | .988 | 1.000 | .597 | .965 |
| Exact Sig. [2*(1-tailed Sig.)] | .989[a] | 1.000[a] | .640[a] | .968[a] |

a. Not corrected for ties.
b. Grouping Variable: Non Response Bias (Early Respondents and Late Respondents)

**Test Statistics[b]**

| | Organicity5 | Organicity6 | Organicity7 | Organicity8 |
|---|---|---|---|---|
| Mann-Whitney U | 170.500 | 151.500 | 181.000 | 199.000 |
| Wilcoxon W | 380.500 | 361.500 | 391.000 | 409.000 |
| Z | -.838 | -1.374 | -.541 | -.029 |
| Asymp. Sig. (2-tailed) | .402 | .169 | .589 | .977 |
| Exact Sig. [2*(1-tailed Sig.)] | .429[a] | .192[a] | .620[a] | .989[a] |

a. Not corrected for ties.

b. Grouping Variable: Non Response Bias (Early Respondents and Late Respondents)

**Test Statistics[b]**

| | Clan1 | Clan2 | Clan3 | Clan4 | Clan5 |
|---|---|---|---|---|---|
| Mann-Whitney U | 122.000 | 162.000 | 162.000 | 142.000 | 165.500 |
| Wilcoxon W | 332.000 | 372.000 | 372.000 | 352.000 | 375.500 |
| Z | -2.179 | -1.105 | -1.135 | -1.682 | -.981 |
| Asymp. Sig. (2-tailed) | .029 | .269 | .256 | .093 | .327 |
| Exact Sig. [2*(1-tailed Sig.)] | .035[a] | .314[a] | .314[a] | .121[a] | .355[a] |

a. Not corrected for ties.

b. Grouping Variable: Non Response Bias (Early Respondents and Late Respondents)

**Test Statistics[b]**

| | Adhocracy1 | Adhocracy2 | Adhocracy3 | Adhocracy4 | Adhocracy5 | Adhocracy6 |
|---|---|---|---|---|---|---|
| Mann-Whitney U | 177.500 | 168.000 | 163.500 | 197.000 | 183.500 | 148.000 |
| Wilcoxon W | 387.500 | 378.000 | 373.500 | 407.000 | 393.500 | 358.000 |
| Z | -.684 | -.991 | -1.030 | -.086 | -.468 | -1.496 |
| Asymp. Sig. (2-tailed) | .494 | .322 | .303 | .931 | .639 | .135 |
| Exact Sig. [2*(1-tailed Sig.)] | .547[a] | .398[a] | .327[a] | .947[a] | .659[a] | .165[a] |

a. Not corrected for ties.

b. Grouping Variable: Non Response Bias (Early Respondents and Late Respondents)

**Test Statistics[b]**

| | Knowledge Sharing Culture 1 | Knowledge Sharing Culture 2 | Knowledge Sharing Culture 3 | Knowledge Sharing Culture 4 |
|---|---|---|---|---|
| Mann-Whitney U | 190.000 | 183.000 | 169.000 | 148.000 |
| Wilcoxon W | 400.000 | 393.000 | 379.000 | 358.000 |
| Z | -.290 | -.523 | -.879 | -1.545 |
| Asymp. Sig. (2-tailed) | .772 | .601 | .379 | .122 |
| Exact Sig. [2*(1-tailed Sig.)] | .799[a] | .659[a] | .414[a] | .165[a] |

a. Not corrected for ties.

b. Grouping Variable: Non Response Bias (Early Respondents and Late Respondents)

**Test Statistics[b]**

| | Emp_Eng1 | Emp_Eng2 | Emp_Eng3 | Emp_Eng4 | Emp_Eng5 | Emp_Eng6 |
|---|---|---|---|---|---|---|
| Mann-Whitney U | 198.500 | 193.500 | 194.000 | 158.500 | 158.000 | 146.500 |
| Wilcoxon W | 408.500 | 403.500 | 404.000 | 368.500 | 368.000 | 356.500 |
| Z | -.044 | -.195 | -.171 | -1.257 | -1.164 | -1.496 |
| Asymp. Sig. (2-tailed) | .965 | .846 | .864 | .209 | .245 | .135 |
| Exact Sig. [2*(1-tailed Sig.)] | .968[a] | .862[a] | .883[a] | .265[a] | .265[a] | .149[a] |

a. Not corrected for ties.

b. Grouping Variable: Non Response Bias (Early Respondents and Late Respondents)

**Test Statistics[b]**

| | Emp_Eng7 | Emp_Eng8 | Emp_Eng9 | Emp_Eng10 | Emp_Eng11 | Emp_Eng12 |
|---|---|---|---|---|---|---|
| Mann-Whitney U | 163.000 | 186.000 | 126.500 | 150.000 | 149.500 | 183.000 |
| Wilcoxon W | 373.000 | 396.000 | 336.500 | 360.000 | 359.500 | 393.000 |
| Z | -1.121 | -.462 | -2.046 | -1.400 | -1.485 | -.514 |
| Asymp. Sig. (2-tailed) | .262 | .644 | .041 | .162 | .138 | .607 |
| Exact Sig. [2*(1-tailed Sig.)] | .327[a] | .718[a] | .046[a] | .183[a] | .174[a] | .659[a] |

**Test Statistics[b]**

| | Emp_Eng7 | Emp_Eng8 | Emp_Eng9 | Emp_Eng10 | Emp_Eng11 | Emp_Eng12 |
|---|---|---|---|---|---|---|
| Mann-Whitney U | 163.000 | 186.000 | 126.500 | 150.000 | 149.500 | 183.000 |
| Wilcoxon W | 373.000 | 396.000 | 336.500 | 360.000 | 359.500 | 393.000 |
| Z | -1.121 | -.462 | -2.046 | -1.400 | -1.485 | -.514 |
| Asymp. Sig. (2-tailed) | .262 | .644 | .041 | .162 | .138 | .607 |
| Exact Sig. [2*(1-tailed Sig.)] | .327[a] | .718[a] | .046[a] | .183[a] | .174[a] | .659[a] |

a. Not corrected for ties.

b. Grouping Variable: Non Response Bias (Early Respondents and Late Respondents)

**Test Statistics[b]**

| | Passive Employee Ambidexterity PEA_Explore1 | Passive Employee Ambidexterity PEA_Explore2 | Passive Employee Ambidexterity PEA_Explore3 | Passive Employee Ambidexterity PEA_Explore4 | Passive Employee Ambidexterity PEA_Explore5 |
|---|---|---|---|---|---|
| Mann-Whitney U | 195.000 | 195.000 | 176.000 | 180.500 | 193.000 |
| Wilcoxon W | 405.000 | 405.000 | 386.000 | 390.500 | 403.000 |
| Z | -.142 | -.142 | -.688 | -.556 | -.197 |
| Asymp. Sig. (2-tailed) | .887 | .887 | .492 | .578 | .844 |
| Exact Sig. [2*(1-tailed Sig.)] | .904[a] | .904[a] | .529[a] | .602[a] | .862[a] |

a. Not corrected for ties.

b. Grouping Variable: Non Response Bias (Early Respondents and Late Respondents)

**Test Statistics[b]**

| | Passive Employee Ambidexterity PEA_Exploit1 | Passive Employee Ambidexterity PEA_Exploit2 | Passive Employee Ambidexterity PEA_Exploit3 | Passive Employee Ambidexterity PEA_Exploit4 | Passive Employee Ambidexterity PEA_Exploit5 |
|---|---|---|---|---|---|
| Mann-Whitney U | 167.500 | 174.500 | 151.000 | 190.000 | 200.000 |
| Wilcoxon W | 377.500 | 384.500 | 361.000 | 400.000 | 410.000 |
| Z | -.967 | -.746 | -1.458 | -.289 | .000 |
| Asymp. Sig. (2-tailed) | .334 | .456 | .145 | .773 | 1.000 |
| Exact Sig. [2*(1-tailed Sig.)] | .383[a] | .495[a] | .192[a] | .799[a] | 1.000[a] |

a. Not corrected for ties.

b. Grouping Variable: Non Response Bias (Early Respondents and Late Respondents)

| | Explore14 | Explore15 | Explore16 | Explore17 |
|---|---|---|---|---|
| Mann-Whitney U | 170.000 | 160.000 | 170.000 | 200.000 |
| Wilcoxon W | 380.000 | 370.000 | 380.000 | 410.000 |
| Z | -1.122 | -1.363 | -1.416 | .000 |
| Asymp. Sig. (2-tailed) | .262 | .173 | .157 | 1.000 |
| Exact Sig. [2*(1-tailed Sig.)] | .429[a] | .289[a] | .429[a] | 1.000[a] |

**Test Statistics[b]**

| | Exploit14b | Exploit15b | Exploit16b | Exploit17b |
|---|---|---|---|---|
| Mann-Whitney U | 160.000 | 160.000 | 180.000 | 200.000 |
| Wilcoxon W | 370.000 | 370.000 | 390.000 | 410.000 |
| Z | -1.363 | -1.363 | -.721 | .000 |
| Asymp. Sig. (2-tailed) | .173 | .173 | .471 | 1.000 |
| Exact Sig. [2*(1-tailed Sig.)] | .289[a] | .289[a] | .602[a] | 1.000[a] |

a. Not corrected for ties.

b. Grouping Variable: Non Response Bias (Early Respondents and Late Respondents)

**Test Statistics[b]**

| | Active Employee Ambidexterity Explore14a | Active Employee Ambidexterity Explore15a | Active Employee Ambidexterity Explore16a | Active Employee Ambidexterity Explore17a |
|---|---|---|---|---|
| Mann-Whitney U | 154.500 | 137.000 | 188.500 | 132.000 |
| Wilcoxon W | 364.500 | 347.000 | 398.500 | 342.000 |
| Z | -1.280 | -1.761 | -.336 | -1.948 |
| Asymp. Sig. (2-tailed) | .201 | .078 | .737 | .051 |
| Exact Sig. [2*(1-tailed Sig.)] | .221[a] | .091[a] | .758[a] | .068[a] |

**Test Statistics[b]**

| | Exploit14b | Exploit15b | Exploit16b | Exploit17b |
|---|---|---|---|---|
| Mann-Whitney U | 160.000 | 160.000 | 180.000 | 200.000 |
| Wilcoxon W | 370.000 | 370.000 | 390.000 | 410.000 |
| Z | -1.363 | -1.363 | -.721 | .000 |
| Asymp. Sig. (2-tailed) | .173 | .173 | .471 | 1.000 |
| Exact Sig. [2*(1-tailed Sig.)] | .289[a] | .289[a] | .602[a] | 1.000[a] |

a. Not corrected for ties.

b. Grouping Variable: Non Response Bias (Early Respondents and Late Respondents)

**Test Statistics[b]**

| | Active Employee Ambidexterity Exploit14bi | Active Employee Ambidexterity Exploit15bi | Active Employee Ambidexterity Exploit16bi | Active Employee Ambidexterity Exploit17bi |
|---|---|---|---|---|
| Mann-Whitney U | 172.000 | 146.000 | 189.000 | 169.000 |
| Wilcoxon W | 382.000 | 356.000 | 399.000 | 379.000 |
| Z | -.794 | -1.522 | -.307 | -.858 |
| Asymp. Sig. (2-tailed) | .427 | .128 | .759 | .391 |
| Exact Sig. [2*(1-tailed Sig.)] | .461[a] | .149[a] | .779[a] | .414[a] |

a. Not corrected for ties.

b. Grouping Variable: Non Response Bias (Early Respondents and Late Respondents)

# Appendix K: Non-Response Bias Analysis for Managerial Staff Paper Survey

**Test Statistics[b]**

| | Company type | Company Location | Manager Gender |
|---|---|---|---|
| Mann-Whitney U | 70.000 | 67.500 | 150.000 |
| Wilcoxon W | 280.000 | 277.500 | 360.000 |
| Z | -4.333 | -3.734 | -1.667 |
| Asymp. Sig. (2-tailed) | .000 | .000 | .096 |
| Exact Sig. [2*(1-tailed Sig.)] | .000[a] | .000[a] | .183[a] |

a. Not corrected for ties.

b. Grouping Variable: Non Response Bias (Early Respondents and Late Respondents)

**Test Statistics[b]**

| | Size | Manager Highest Qualifications | Professional Qualifications |
|---|---|---|---|
| Mann-Whitney U | 126.500 | 103.500 | 200.000 |
| Wilcoxon W | 336.500 | 313.500 | 410.000 |
| Z | -2.723 | -2.693 | .000 |
| Asymp. Sig. (2-tailed) | .006 | .007 | 1.000 |
| Exact Sig. [2*(1-tailed Sig.)] | .046[a] | .008[a] | 1.000[a] |

a. Not corrected for ties.

b. Grouping Variable: Non Response Bias (Early Respondents and Late Respondents)

**Test Statistics[b]**

| | Org_Inno_1 | Org_Inno_2 | Org_Inno_3 | Org_Inno_4 | Org_Inno_5 |
|---|---|---|---|---|---|
| Mann-Whitney U | 182.000 | 184.000 | 163.000 | 200.000 | 195.500 |
| Wilcoxon W | 392.000 | 394.000 | 373.000 | 410.000 | 405.500 |
| Z | -.522 | -.464 | -1.060 | .000 | -.127 |
| Asymp. Sig. (2-tailed) | .602 | .642 | .289 | 1.000 | .899 |
| Exact Sig. [2*(1-tailed Sig.)] | .640[a] | .678[a] | .327[a] | 1.000[a] | .904[a] |

a. Not corrected for ties.

b. Grouping Variable: Non Response Bias (Early Respondents and Late Respondents)

**Test Statistics[b]**

| | Org_Inno_6 | Org_Inno_7 | Org_Inno_8 | Org_Inno_9 | Org_Inno_10 |
|---|---|---|---|---|---|
| Mann-Whitney U | 108.500 | 190.500 | 141.500 | 175.000 | 173.000 |
| Wilcoxon W | 318.500 | 400.500 | 351.500 | 385.000 | 383.000 |
| Z | -2.576 | -.266 | -1.643 | -.707 | -.782 |
| Asymp. Sig. (2-tailed) | .010 | .790 | .100 | .480 | .434 |
| Exact Sig. [2*(1-tailed Sig.)] | .012[a] | .799[a] | .114[a] | .512[a] | .478[a] |

a. Not corrected for ties.

b. Grouping Variable: Non Response Bias (Early Respondents and Late Respondents)

**Test Statistics[b]**

| | Mar_Inno_1 | Mar_Inno_2 | Mar_Inno_3 | Mar_Inno_4 | Mar_Inno_5 |
|---|---|---|---|---|---|
| Mann-Whitney U | 172.500 | 166.000 | 173.500 | 173.500 | 194.500 |
| Wilcoxon W | 382.500 | 376.000 | 383.500 | 383.500 | 404.500 |
| Z | -.774 | -.955 | -.738 | -.762 | -.154 |
| Asymp. Sig. (2-tailed) | .439 | .340 | .461 | .446 | .878 |
| Exact Sig. [2*(1-tailed Sig.)] | .461[a] | .369[a] | .478[a] | .478[a] | .883[a] |

a. Not corrected for ties.

b. Grouping Variable: Non Response Bias (Early Respondents and Late Respondents)

**Test Statistics[b]**

| | Mar_Inno_6 | Mar_Inno_7 | Mar_Inno_8 | Mar_Inno_9 |
|---|---|---|---|---|
| Mann-Whitney U | 164.000 | 195.000 | 195.500 | 151.500 |
| Wilcoxon W | 374.000 | 405.000 | 405.500 | 361.500 |
| Z | -1.055 | -.141 | -.128 | -1.419 |
| Asymp. Sig. (2-tailed) | .292 | .888 | .898 | .156 |
| Exact Sig. [2*(1-tailed Sig.)] | .341[a] | .904[a] | .904[a] | .192[a] |

a. Not corrected for ties.

b. Grouping Variable: Non Response Bias (Early Respondents and Late Respondents)

**Test Statistics[b]**

| | Mar_Inno_10 | Mar_Inno_11 | Mar_Inno_12 | Mar_Inno_13 |
|---|---|---|---|---|
| Mann-Whitney U | 142.000 | 180.000 | 183.000 | 187.000 |
| Wilcoxon W | 352.000 | 390.000 | 393.000 | 397.000 |
| Z | -1.666 | -.564 | -.497 | -.374 |
| Asymp. Sig. (2-tailed) | .096 | .572 | .620 | .709 |
| Exact Sig. [2*(1-tailed Sig.)] | .121[a] | .602[a] | .659[a] | .738[a] |

a. Not corrected for ties.

b. Grouping Variable: Non Response Bias (Early Respondents and Late Respondents)

**Test Statistics[b]**

| | OA_Explore1 | OA_Explore2 | OA_Explore3 | OA_Explore4 | OA_Explore5 | OA_Explore6 |
|---|---|---|---|---|---|---|
| Mann-Whitney U | 124.500 | 182.000 | 175.500 | 189.000 | 125.500 | 145.500 |
| Wilcoxon W | 334.500 | 392.000 | 385.500 | 399.000 | 335.500 | 355.500 |
| Z | -2.180 | -.506 | -.695 | -.318 | -2.148 | -1.523 |
| Asymp. Sig. (2-tailed) | .029 | .613 | .487 | .750 | .032 | .128 |
| Exact Sig. [2*(1-tailed Sig.)] | .040[a] | .640[a] | .512[a] | .779[a] | .043[a] | .142[a] |

a. Not corrected for ties.

b. Grouping Variable: Non Response Bias (Early Respondents and Late Respondents)

**Test Statistics[b]**

| | OA_Exploit1 | OA_Exploit2 | OA_Exploit3 | OA_Exploit4 | OA_Exploit5 | OA_Exploit6 |
|---|---|---|---|---|---|---|
| Mann-Whitney U | 137.000 | 178.000 | 163.500 | 187.500 | 143.000 | 196.000 |
| Wilcoxon W | 347.000 | 388.000 | 373.500 | 397.500 | 353.000 | 406.000 |
| Z | -1.805 | -.635 | -1.023 | -.358 | -1.608 | -.119 |
| Asymp. Sig. (2-tailed) | .071 | .525 | .306 | .720 | .108 | .905 |
| Exact Sig. [2*(1-tailed Sig.)] | .091[a] | .565[a] | .327[a] | .738[a] | .127[a] | .925[a] |

a. Not corrected for ties.

b. Grouping Variable: Non Response Bias (Early Respondents and Late Respondents)

**Test Statistics[b]**

| | MA_Explore1 | MA_Explore2 | MA_Explore3 | MA_Explore4 | MA_Explore5 | MA_Explore6 | MA_Explore7 |
|---|---|---|---|---|---|---|---|
| Mann-Whitney U | 134.000 | 151.000 | 162.000 | 170.500 | 167.500 | 159.500 | 186.500 |
| Wilcoxon W | 344.000 | 361.000 | 372.000 | 380.500 | 377.500 | 369.500 | 396.500 |
| Z | -1.881 | -1.382 | -1.091 | -.829 | -.954 | -1.154 | -.380 |
| Asymp. Sig. (2-tailed) | .060 | .167 | .275 | .407 | .340 | .248 | .704 |
| Exact Sig. [2*(1-tailed Sig.)] | .076[a] | .192[a] | .314[a] | .429[a] | .383[a] | .277[a] | .718[a] |

a. Not corrected for ties.

b. Grouping Variable: Non Response Bias (Early Respondents and Late Respondents)

**Test Statistics[b]**

| | MA_Exploit1 | MA_Exploit2 | MA_Exploit3 | MA_Exploit4 | MA_Exploit5 | MA_Exploit6 | MA_Exploit7 |
|---|---|---|---|---|---|---|---|
| Mann-Whitney U | 153.500 | 179.500 | 149.500 | 194.000 | 189.500 | 166.000 | 189.000 |
| Wilcoxon W | 363.500 | 389.500 | 359.500 | 404.000 | 399.500 | 376.000 | 399.000 |
| Z | -1.397 | -.582 | -1.470 | -.174 | -.298 | -1.003 | -.321 |
| Asymp. Sig. (2-tailed) | .163 | .561 | .142 | .862 | .766 | .316 | .748 |
| Exact Sig. [2*(1-tailed Sig.)] | .211[a] | .583[a] | .174[a] | .883[a] | .779[a] | .369[a] | .779[a] |

a. Not corrected for ties.

b. Grouping Variable: Non Response Bias (Early Respondents and Late Respondents)

**Test Statistics[b]**

| | Cstmer_E1 | Cstmer_E2 | Cstmer_E3 | Cstmer_E4 | Cstmer_E5 |
|---|---|---|---|---|---|
| Mann-Whitney U | 184.500 | 126.500 | 144.000 | 185.000 | 190.000 |
| Wilcoxon W | 394.500 | 336.500 | 354.000 | 395.000 | 400.000 |
| Z | -.440 | -2.170 | -1.588 | -.441 | -.283 |
| Asymp. Sig. (2-tailed) | .660 | .030 | .112 | .659 | .777 |
| Exact Sig. [2*(1-tailed Sig.)] | .678[a] | .046[a] | .134[a] | .698[a] | .799[a] |

a. Not corrected for ties.

b. Grouping Variable: Non Response Bias (Early Respondents and Late Respondents)

**Test Statistics[b]**

| | Cstmer_E6 | Cstmer_E7 | Cstmer_E8 | Cstmer_E9 | Cstmer_E10 |
|---|---|---|---|---|---|
| Mann-Whitney U | 192.000 | 194.500 | 146.500 | 134.500 | 185.500 |
| Wilcoxon W | 402.000 | 404.500 | 356.500 | 344.500 | 395.500 |
| Z | -.230 | -.154 | -1.531 | -1.864 | -.417 |
| Asymp. Sig. (2-tailed) | .818 | .877 | .126 | .062 | .677 |
| Exact Sig. [2*(1-tailed Sig.)] | .841[a] | .883[a] | .149[a] | .076[a] | .698[a] |

a. Not corrected for ties.

b. Grouping Variable: Non Response Bias (Early Respondents and Late Respondents)

**Test Statistics[b]**

| | Cstmer_E11 | Cstmer_E12 | Cstmer_E13 | Cstmer_E14 |
|---|---|---|---|---|
| Mann-Whitney U | 121.000 | 188.000 | 196.000 | 199.500 |
| Wilcoxon W | 331.000 | 398.000 | 406.000 | 409.500 |
| Z | -2.224 | -.344 | -.112 | -.014 |
| Asymp. Sig. (2-tailed) | .026 | .731 | .911 | .989 |
| Exact Sig. [2*(1-tailed Sig.)] | .033[a] | .758[a] | .925[a] | .989[a] |

a. Not corrected for ties.

b. Grouping Variable: Non Response Bias (Early Respondents and Late Respondents)

**Test Statistics[b]**

| | Sales Performance | Growth rate of sales | Achievement of sales target set | Return on Investment | Growth of net profit over the last three years | Overall Profitability |
|---|---|---|---|---|---|---|
| Mann-Whitney U | 115.000 | 112.500 | 140.000 | 81.000 | 66.500 | 101.000 |
| Wilcoxon W | 325.000 | 322.500 | 350.000 | 291.000 | 276.500 | 311.000 |
| Z | -2.449 | -2.517 | -1.709 | -3.389 | -3.782 | -2.800 |
| Asymp. Sig. (2-tailed) | .014 | .012 | .087 | .001 | .000 | .005 |
| Exact Sig. [2*(1-tailed Sig.)] | .021[a] | .017[a] | .108[a] | .001[a] | .000[a] | .007[a] |

a. Not corrected for ties.

b. Grouping Variable: Non Response Bias (Early Respondents and Late Respondents)

# Appendix L: Non-Response Bias Analysis for Shop-floor Staff Paper Survey

**Test Statistics[b]**

| | Compy_Type | Company location | Emp_SexQ2 |
|---|---|---|---|
| Mann-Whitney U | 40.000 | 90.000 | 150.000 |
| Wilcoxon W | 250.000 | 300.000 | 360.000 |
| Z | -5.099 | -3.137 | -1.667 |
| Asymp. Sig. (2-tailed) | .000 | .002 | .096 |
| Exact Sig. [2*(1-tailed Sig.)] | .000[a] | .002[a] | .183[a] |

a. Not corrected for ties.
b. Grouping Variable: Non Response Bias (Early Respondents and Late Respondents)

**Test Statistics[b]**

| | Compy_Size | Employee Highest Qualification | Professional Qualifications |
|---|---|---|---|
| Mann-Whitney U | 150.000 | 143.500 | 170.000 |
| Wilcoxon W | 360.000 | 353.500 | 380.000 |
| Z | -2.355 | -1.841 | -1.778 |
| Asymp. Sig. (2-tailed) | .019 | .066 | .075 |
| Exact Sig. [2*(1-tailed Sig.)] | .183[a] | .127[a] | .429[a] |

a. Not corrected for ties.
b. Grouping Variable: Non Response Bias (Early Respondents and Late Respondents)

**Test Statistics[b]**

| | Organicity1 | Organicity2 | Organicity3 | Organicity4 |
|---|---|---|---|---|
| Mann-Whitney U | 137.500 | 192.500 | 97.500 | 139.500 |
| Wilcoxon W | 347.500 | 402.500 | 307.500 | 349.500 |
| Z | -1.836 | -.224 | -2.900 | -1.722 |
| Asymp. Sig. (2-tailed) | .066 | .823 | .004 | .085 |
| Exact Sig. [2*(1-tailed Sig.)] | .091[a] | .841[a] | .005[a] | .102[a] |

a. Not corrected for ties.
b. Grouping Variable: Non Response Bias (Early Respondents and Late Respondents)

**Test Statistics[b]**

| | Organicity5 | Organicity6 | Organicity7 | Organicity8 |
|---|---|---|---|---|
| Mann-Whitney U | 177.500 | 180.500 | 145.000 | 196.500 |
| Wilcoxon W | 387.500 | 390.500 | 355.000 | 406.500 |
| Z | -.632 | -.551 | -1.555 | -.100 |
| Asymp. Sig. (2-tailed) | .528 | .582 | .120 | .920 |
| Exact Sig. [2*(1-tailed Sig.)] | .547[a] | .602[a] | .142[a] | .925[a] |

a. Not corrected for ties.

b. Grouping Variable: Non Response Bias (Early Respondents and Late Respondents)

**Test Statistics[b]**

| | Clan1 | Clan2 | Clan3 | Clan4 | Clan5 |
|---|---|---|---|---|---|
| Mann-Whitney U | 128.000 | 184.500 | 143.500 | 121.000 | 166.000 |
| Wilcoxon W | 338.000 | 394.500 | 353.500 | 331.000 | 376.000 |
| Z | -2.020 | -.462 | -1.667 | -2.310 | -1.044 |
| Asymp. Sig. (2-tailed) | .043 | .644 | .095 | .021 | .297 |
| Exact Sig. [2*(1-tailed Sig.)] | .052[a] | .678[a] | .127[a] | .033[a] | .369[a] |

a. Not corrected for ties.

b. Grouping Variable: Non Response Bias (Early Respondents and Late Respondents)

**Test Statistics[b]**

| | Adhocracy1 | Adhocracy2 | Adhocracy3 | Adhocracy4 | Adhocracy5 | Adhocracy6 |
|---|---|---|---|---|---|---|
| Mann-Whitney U | 183.000 | 176.500 | 184.000 | 145.000 | 178.000 | 98.500 |
| Wilcoxon W | 393.000 | 386.500 | 394.000 | 355.000 | 388.000 | 308.500 |
| Z | -.496 | -.690 | -.445 | -1.559 | -.668 | -2.929 |
| Asymp. Sig. (2-tailed) | .620 | .490 | .656 | .119 | .504 | .003 |
| Exact Sig. [2*(1-tailed Sig.)] | .659[a] | .529[a] | .678[a] | .142[a] | .565[a] | .005[a] |

a. Not corrected for ties.

b. Grouping Variable: Non Response Bias (Early Respondents and Late Respondents)

**Test Statistics[b]**

| | Knowledge Sharing Culture 1 | Knowledge Sharing Culture 2 | Knowledge Sharing Culture 3 | Knowledge Sharing Culture 4 |
|---|---|---|---|---|
| Mann-Whitney U | 140.000 | 166.500 | 186.000 | 133.500 |
| Wilcoxon W | 350.000 | 376.500 | 396.000 | 343.500 |
| Z | -1.718 | -.949 | -.448 | -1.920 |
| Asymp. Sig. (2-tailed) | .086 | .342 | .654 | .055 |
| Exact Sig. [2*(1-tailed Sig.)] | .108[a] | .369[a] | .718[a] | .072[a] |

a. Not corrected for ties.
b. Grouping Variable: Non Response Bias (Early Respondents and Late Respondents)

**Test Statistics[b]**

| | Emp_Eng1 | Emp_Eng2 | Emp_Eng3 | Emp_Eng4 |
|---|---|---|---|---|
| Mann-Whitney U | 164.500 | 199.000 | 196.500 | 182.500 |
| Wilcoxon W | 374.500 | 409.000 | 406.500 | 392.500 |
| Z | -1.065 | -.028 | -.099 | -.512 |
| Asymp. Sig. (2-tailed) | .287 | .977 | .921 | .609 |
| Exact Sig. [2*(1-tailed Sig.)] | .341[a] | .989[a] | .925[a] | .640[a] |

a. Not corrected for ties.
b. Grouping Variable: Non Response Bias (Early Respondents and Late Respondents)

**Test Statistics[b]**

| | Emp_Eng5 | Emp_Eng6 | Emp_Eng7 | Emp_Eng8 |
|---|---|---|---|---|
| Mann-Whitney U | 157.500 | 160.000 | 152.500 | 162.500 |
| Wilcoxon W | 367.500 | 370.000 | 362.500 | 372.500 |
| Z | -1.218 | -1.210 | -1.391 | -1.151 |
| Asymp. Sig. (2-tailed) | .223 | .226 | .164 | .250 |
| Exact Sig. [2*(1-tailed Sig.)] | .253[a] | .289[a] | .201[a] | .314[a] |

a. Not corrected for ties.
b. Grouping Variable: Non Response Bias (Early Respondents and Late Respondents)

**Test Statistics[b]**

| | Emp_Eng9 | Emp_Eng10 | Emp_Eng11 | Emp_Eng12 |
|---|---|---|---|---|
| Mann-Whitney U | 166.000 | 185.500 | 185.500 | 100.500 |
| Wilcoxon W | 376.000 | 395.500 | 395.500 | 310.500 |
| Z | -.993 | -.411 | -.421 | -2.819 |
| Asymp. Sig. (2-tailed) | .321 | .681 | .674 | .005 |
| Exact Sig. [2*(1-tailed Sig.)] | .369[a] | .698[a] | .698[a] | .006[a] |

a. Not corrected for ties.

b. Grouping Variable: Non Response Bias (Early Respondents and Late Respondents)

**Test Statistics[b]**

| | Passive Employee Ambidexterity PEA_Explore1 | Passive Employee Ambidexterity PEA_Explore2 | Passive Employee Ambidexterity PEA_Explore3 | Passive Employee Ambidexterity PEA_Explore4 | Passive Employee Ambidexterity PEA_Explore5 |
|---|---|---|---|---|---|
| Mann-Whitney U | 94.000 | 171.500 | 142.000 | 148.500 | 176.500 |
| Wilcoxon W | 304.000 | 381.500 | 352.000 | 358.500 | 386.500 |
| Z | -3.007 | -.813 | -1.637 | -1.491 | -.667 |
| Asymp. Sig. (2-tailed) | .003 | .416 | .102 | .136 | .505 |
| Exact Sig. [2*(1-tailed Sig.)] | .004[a] | .445[a] | .121[a] | .165[a] | .529[a] |

a. Not corrected for ties.

b. Grouping Variable: Non Response Bias (Early Respondents and Late Respondents)

**Test Statistics[b]**

| | Passive Employee Ambidexterity PEA_Exploit1 | Passive Employee Ambidexterity PEA_Exploit2 | Passive Employee Ambidexterity PEA_Exploit3 | Passive Employee Ambidexterity PEA_Exploit4 | Passive Employee Ambidexterity PEA_Exploit5 |
|---|---|---|---|---|---|
| Mann-Whitney U | 150.000 | 131.000 | 130.500 | 121.500 | 144.000 |
| Wilcoxon W | 360.000 | 341.000 | 340.500 | 331.500 | 354.000 |
| Z | -1.461 | -1.989 | -2.004 | -2.257 | -1.606 |
| Asymp. Sig. (2-tailed) | .144 | .047 | .045 | .024 | .108 |
| Exact Sig. [2*(1-tailed Sig.)] | .183[a] | .063[a] | .060[a] | .033[a] | .134[a] |

a. Not corrected for ties.

b. Grouping Variable: Non Response Bias (Early Respondents and Late Respondents)

**Test Statistics[b]**

| | Explore14 | Explore15 | Explore16 | Explore17 |
|---|---|---|---|---|
| Mann-Whitney U | 190.000 | 140.000 | 180.000 | 160.000 |
| Wilcoxon W | 400.000 | 350.000 | 390.000 | 370.000 |
| Z | -.350 | -1.883 | -.637 | -1.442 |
| Asymp. Sig. (2-tailed) | .727 | .060 | .524 | .149 |
| Exact Sig. [2*(1-tailed Sig.)] | .799[a] | .108[a] | .602[a] | .289[a] |

a. Not corrected for ties.
b. Grouping Variable: Non Response Bias (Early Respondents and Late Respondents)

**Test Statistics[b]**

| | Active Employee Ambidexterity Explore14a | Active Employee Ambidexterity Explore15a | Active Employee Ambidexterity Explore16a | Active Employee Ambidexterity Explore17a |
|---|---|---|---|---|
| Mann-Whitney U | 126.500 | 132.500 | 183.000 | 118.000 |
| Wilcoxon W | 336.500 | 342.500 | 393.000 | 328.000 |
| Z | -2.063 | -2.010 | -.483 | -2.301 |
| Asymp. Sig. (2-tailed) | .039 | .044 | .629 | .021 |
| Exact Sig. [2*(1-tailed Sig.)] | .046[a] | .068[a] | .659[a] | .026[a] |

a. Not corrected for ties.
b. Grouping Variable: Non Response Bias (Early Respondents and Late Respondents)

**Test Statistics[b]**

| | Exploit14b | Exploit15b | Exploit16b | Exploit17b |
|---|---|---|---|---|
| Mann-Whitney U | 200.000 | 140.000 | 200.000 | 170.000 |
| Wilcoxon W | 410.000 | 350.000 | 410.000 | 380.000 |
| Z | .000 | -1.883 | .000 | -1.049 |
| Asymp. Sig. (2-tailed) | 1.000 | .060 | 1.000 | .294 |
| Exact Sig. [2*(1-tailed Sig.)] | 1.000[a] | .108[a] | 1.000[a] | .429[a] |

a. Not corrected for ties.
b. Grouping Variable: Non Response Bias (Early Respondents and Late Respondents)

**Test Statistics[b]**

| | Active Employee Ambidexterity Exploit14bi | Active Employee Ambidexterity Exploit15bi | Active Employee Ambidexterity Exploit16bi | Active Employee Ambidexterity Exploit17bi |
|---|---|---|---|---|
| Mann-Whitney U | 152.500 | 124.000 | 171.500 | 151.000 |
| Wilcoxon W | 362.500 | 334.000 | 381.500 | 361.000 |
| Z | -1.332 | -2.261 | -.834 | -1.369 |
| Asymp. Sig. (2-tailed) | .183 | .024 | .404 | .171 |
| Exact Sig. [2*(1-tailed Sig.)] | .201[a] | .040[a] | .445[a] | .192[a] |

a. Not corrected for ties.

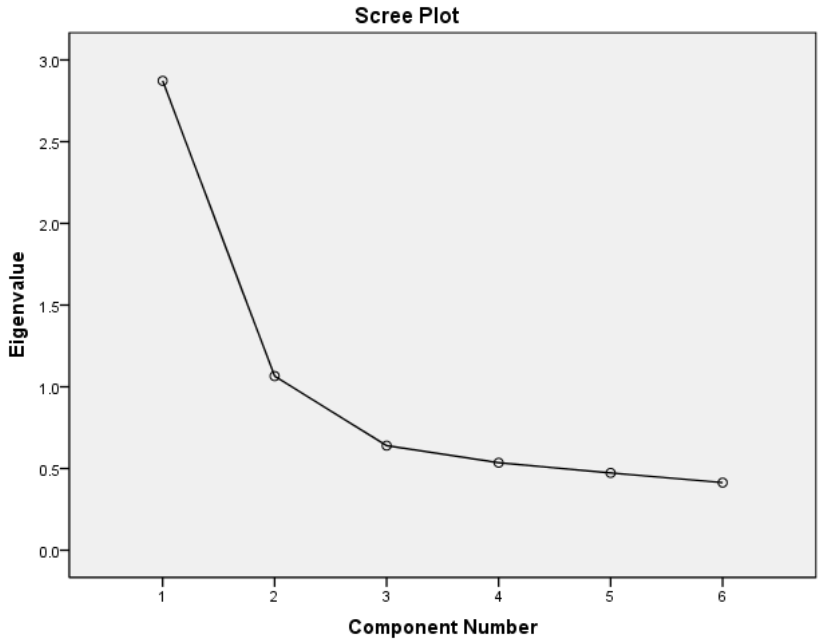
b. Grouping Variable: Non Response Bias (Early Respondents and Late Respondents)

# Appendix M1: Total Variance Explained and Scree Plot for Organic Structure Items

**Total Variance Explained**

| Component | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings | | |
|---|---|---|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 2.872 | 47.872 | 47.872 | 2.872 | 47.872 | 47.872 | 2.026 | 33.765 | 33.765 |
| 2 | 1.066 | 17.759 | 65.630 | 1.066 | 17.759 | 65.630 | 1.912 | 31.865 | 65.630 |
| 3 | .640 | 10.665 | 76.295 | | | | | | |
| 4 | .535 | 8.924 | 85.219 | | | | | | |
| 5 | .473 | 7.882 | 93.102 | | | | | | |
| 6 | .414 | 6.898 | 100.000 | | | | | | |

Extraction Method: Principal Component Analysis.

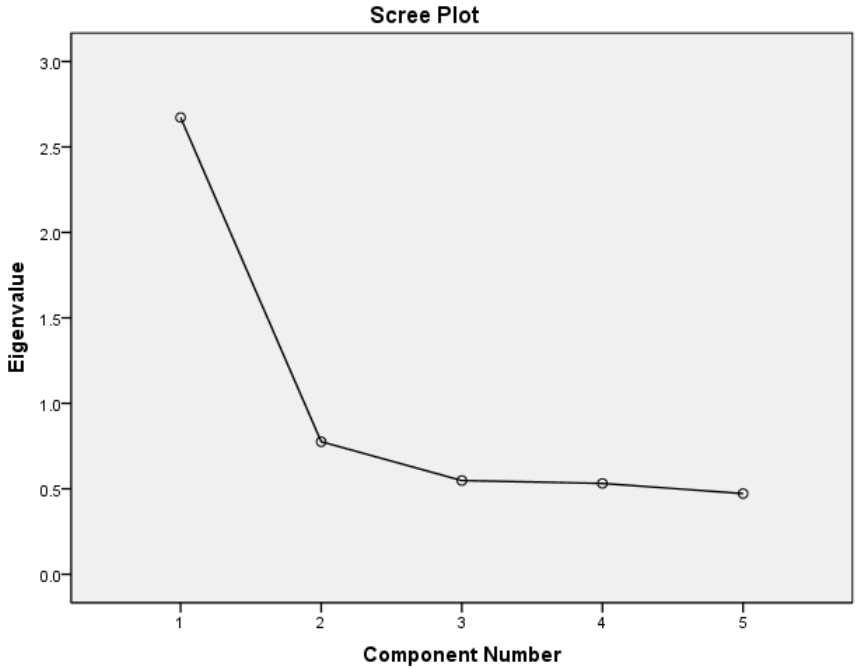


# Appendix M2: Total Variance Explained and Scree Plot for Clan Culture Items

**Total Variance Explained**

| Component | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | |
|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 2.672 | 53.446 | 53.446 | 2.672 | 53.446 | 53.446 |
| 2 | .776 | 15.511 | 68.957 | | | |
| 3 | .548 | 10.966 | 79.923 | | | |
| 4 | .532 | 10.635 | 90.558 | | | |
| 5 | .472 | 9.442 | 100.000 | | | |

Extraction Method: Principal Component Analysis.

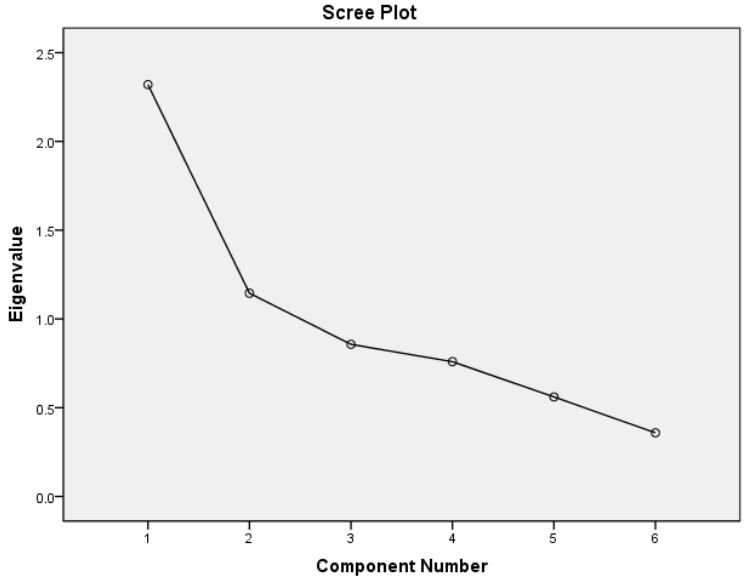


# Appendix M3: Total Variance Explained and Scree Plot for Adhocracy Culture Items

**Total Variance Explained**

| Component | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings | | |
|---|---|---|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 2.320 | 38.665 | 38.665 | 2.320 | 38.665 | 38.665 | 2.202 | 36.693 | 36.693 |
| 2 | 1.145 | 19.085 | 57.750 | 1.145 | 19.085 | 57.750 | 1.263 | 21.056 | 57.750 |
| 3 | .857 | 14.280 | 72.030 | | | | | | |
| 4 | .759 | 12.651 | 84.681 | | | | | | |
| 5 | .561 | 9.345 | 94.026 | | | | | | |
| 6 | .358 | 5.974 | 100.000 | | | | | | |

Extraction Method: Principal Component Analysis.

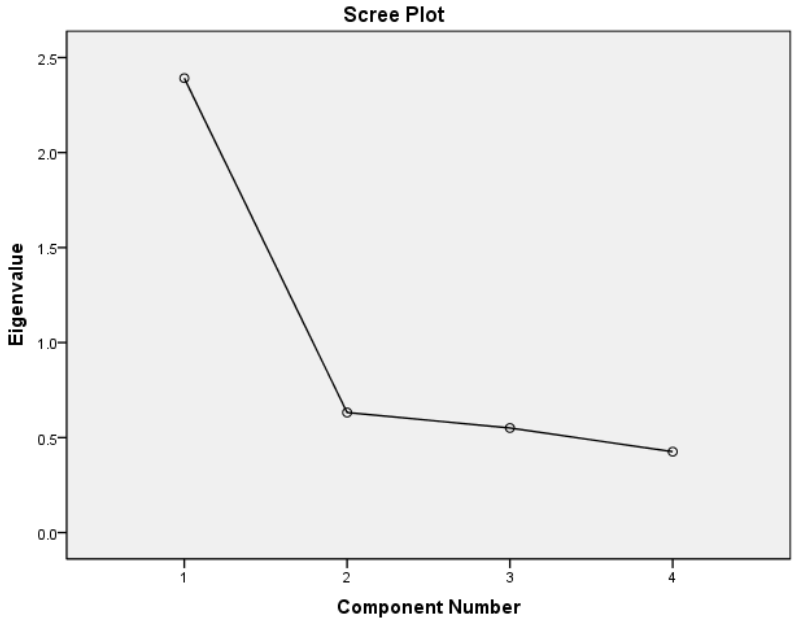


# Appendix M4: Total Variance Explained and Scree Plot for Knowledge Sharing Culture Items

**Total Variance Explained**

| Component | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | |
|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 2.392 | 59.789 | 59.789 | 2.392 | 59.789 | 59.789 |
| 2 | .632 | 15.800 | 75.590 | | | |
| 3 | .551 | 13.766 | 89.356 | | | |
| 4 | .426 | 10.644 | 100.000 | | | |

Extraction Method: Principal Component Analysis.

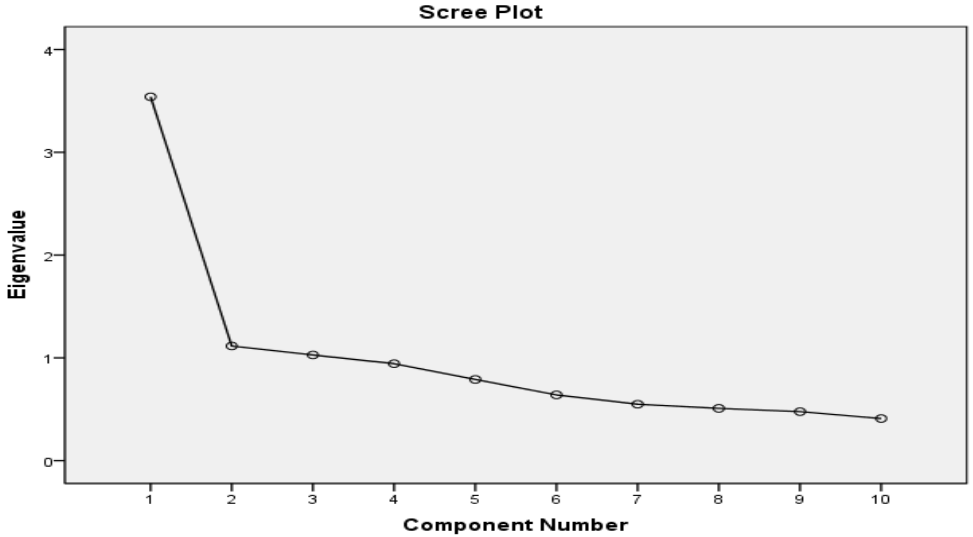


# Appendix M5: Total Variance Explained and Scree Plot for Employee Level of Engagement Items

**Total Variance Explained**

| Component | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings | | |
|---|---|---|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 3.540 | 35.400 | 35.400 | 3.540 | 35.400 | 35.400 | 2.139 | 21.393 | 21.393 |
| 2 | 1.115 | 11.151 | 46.551 | 1.115 | 11.151 | 46.551 | 1.921 | 19.211 | 40.604 |
| 3 | 1.028 | 10.281 | 56.833 | 1.028 | 10.281 | 56.833 | 1.623 | 16.229 | 56.833 |
| 4 | .943 | 9.433 | 66.266 | | | | | | |
| 5 | .790 | 7.901 | 74.166 | | | | | | |
| 6 | .640 | 6.396 | 80.562 | | | | | | |
| 7 | .549 | 5.489 | 86.051 | | | | | | |
| 8 | .509 | 5.085 | 91.136 | | | | | | |
| 9 | .477 | 4.768 | 95.905 | | | | | | |
| 10 | .410 | 4.095 | 100.000 | | | | | | |

Extraction Method: Principal Component Analysis.

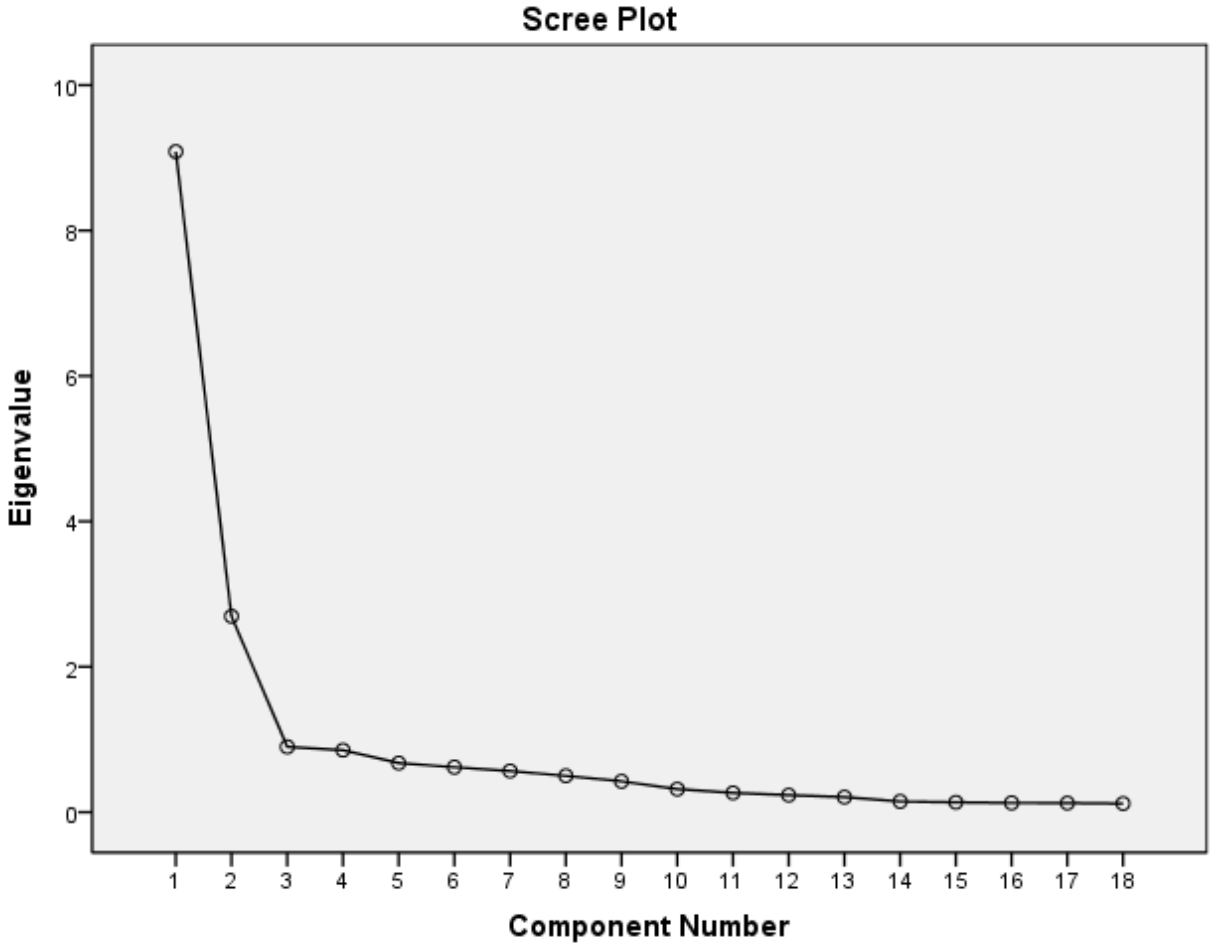


# Appendix M6: Total Variance Explained and Scree Plot for Shop-floor Employee Ambidexterity Items

**Total Variance Explained**

| Component | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings | | |
|---|---|---|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 9.086 | 50.478 | 50.478 | 9.086 | 50.478 | 50.478 | 6.550 | 36.388 | 36.388 |
| 2 | 2.694 | 14.969 | 65.447 | 2.694 | 14.969 | 65.447 | 5.231 | 29.060 | 65.447 |
| 3 | .899 | 4.995 | 70.443 | | | | | | |
| 4 | .853 | 4.738 | 75.180 | | | | | | |
| 5 | .675 | 3.751 | 78.931 | | | | | | |
| 6 | .619 | 3.441 | 82.373 | | | | | | |
| 7 | .567 | 3.149 | 85.522 | | | | | | |
| 8 | .500 | 2.778 | 88.300 | | | | | | |
| 9 | .425 | 2.359 | 90.660 | | | | | | |
| 10 | .318 | 1.764 | 92.424 | | | | | | |
| 11 | .266 | 1.478 | 93.902 | | | | | | |
| 12 | .234 | 1.302 | 95.205 | | | | | | |
| 13 | .207 | 1.152 | 96.357 | | | | | | |
| 14 | .148 | .824 | 97.180 | | | | | | |
| 15 | .136 | .757 | 97.937 | | | | | | |
| 16 | .127 | .707 | 98.644 | | | | | | |
| 17 | .125 | .692 | 99.335 | | | | | | |
| 18 | .120 | .665 | 100.000 | | | | | | |

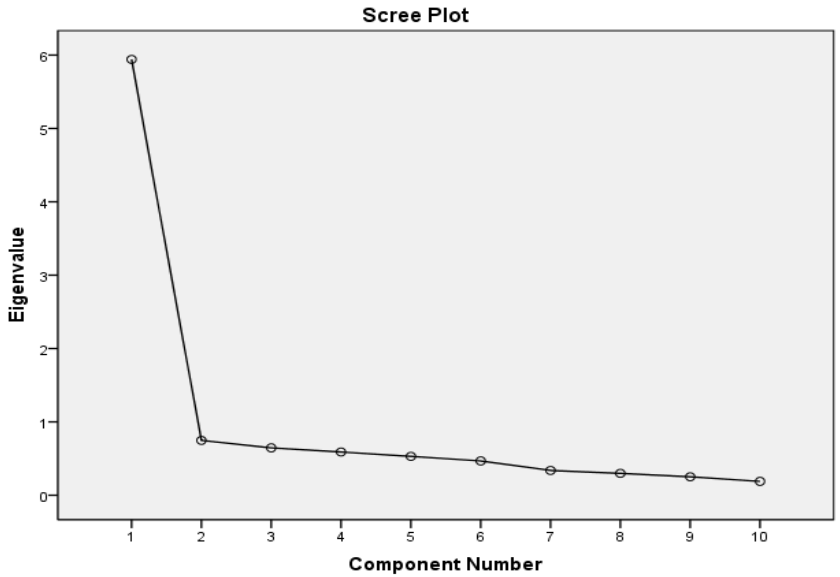
Extraction Method: Principal Component Analysis.


Scree Plot
Eigenvalue
10
8
6
4
2
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
Component Number

# Appendix M7: Total Variance Explained and Scree Plot for Organisational Innovation Items

| Component | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | |
|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 5.942 | 59.416 | 59.416 | 5.942 | 59.416 | 59.416 |
| 2 | .748 | 7.480 | 66.896 | | | |
| 3 | .646 | 6.458 | 73.354 | | | |
| 4 | .590 | 5.899 | 79.253 | | | |
| 5 | .530 | 5.301 | 84.554 | | | |
| 6 | .468 | 4.677 | 89.231 | | | |
| 7 | .338 | 3.382 | 92.613 | | | |
| 8 | .298 | 2.983 | 95.596 | | | |
| 9 | .252 | 2.516 | 98.111 | | | |
| 10 | .189 | 1.889 | 100.000 | | | |

Extraction Method: Principal Component Analysis.



# Appendix M8: Total Variance Explained and Scree Plot for Marketing Innovation Items

**Total Variance Explained**

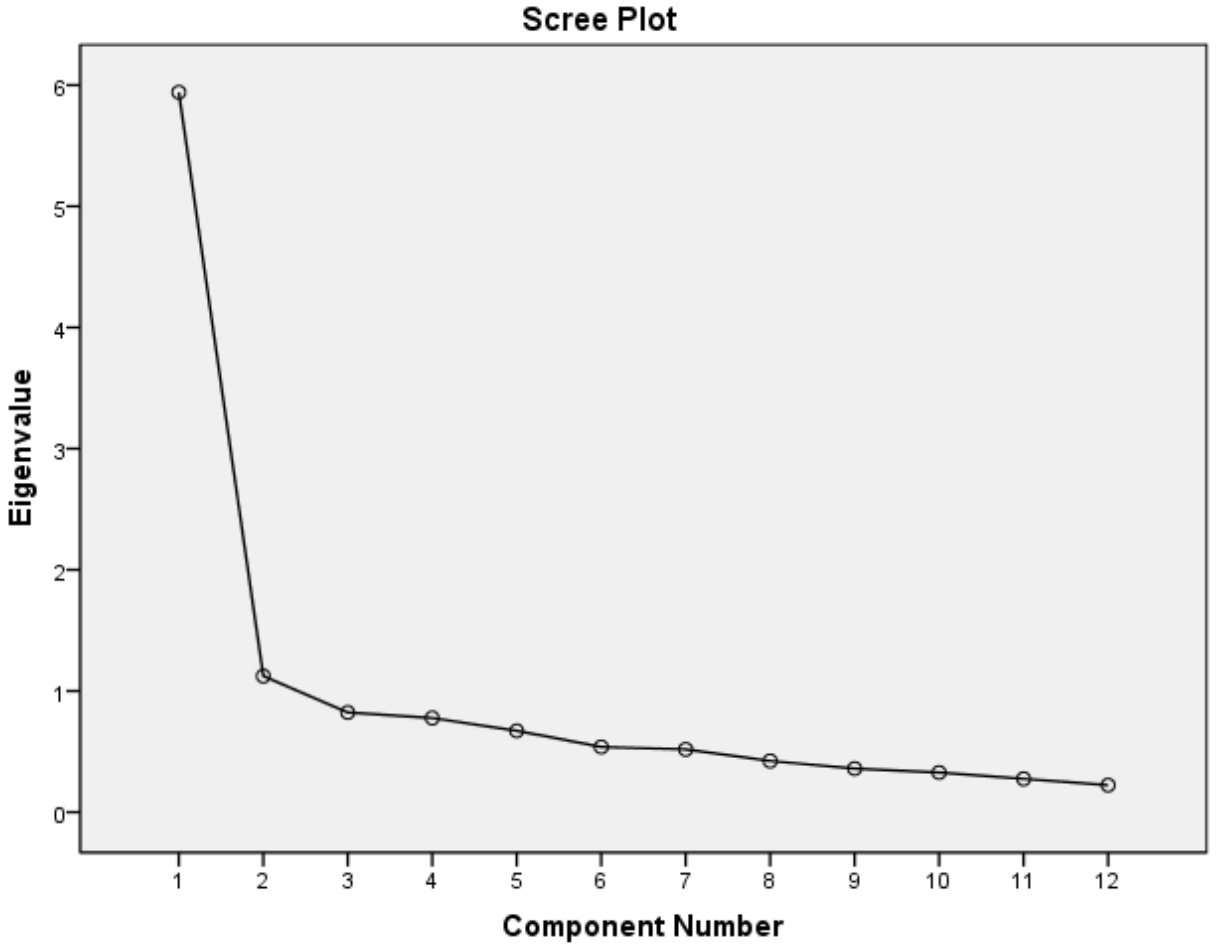
| Component | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | |
|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 5.475 | 54.749 | 54.749 | 5.475 | 54.749 | 54.749 |
| 2 | .990 | 9.899 | 64.648 | | | |
| 3 | .792 | 7.918 | 72.565 | | | |
| 4 | .566 | 5.656 | 78.222 | | | |
| 5 | .531 | 5.315 | 83.537 | | | |
| 6 | .422 | 4.220 | 87.757 | | | |
| 7 | .387 | 3.865 | 91.622 | | | |
| 8 | .338 | 3.379 | 95.000 | | | |
| 9 | .282 | 2.819 | 97.820 | | | |
| 10 | .218 | 2.180 | 100.000 | | | |

Extraction Method: Principal Component Analysis.

## Appendix M9: Total Variance Explained and Scree Plot for Organisational Ambidexterity Items

| Component | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings | | |
|---|---|---|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 5.941 | 49.510 | 49.510 | 5.941 | 49.510 | 49.510 | 4.000 | 33.331 | 33.331 |
| 2 | 1.123 | 9.359 | 58.869 | 1.123 | 9.359 | 58.869 | 3.065 | 25.538 | 58.869 |
| 3 | .823 | 6.856 | 65.725 | | | | | | |
| 4 | .777 | 6.473 | 72.199 | | | | | | |
| 5 | .672 | 5.596 | 77.795 | | | | | | |
| 6 | .538 | 4.485 | 82.279 | | | | | | |
| 7 | .518 | 4.320 | 86.599 | | | | | | |
| 8 | .423 | 3.523 | 90.122 | | | | | | |
| 9 | .360 | 2.996 | 93.119 | | | | | | |
| 10 | .327 | 2.725 | 95.843 | | | | | | |
| 11 | .275 | 2.295 | 98.139 | | | | | | |
| 12 | .223 | 1.861 | 100.000 | | | | | | |

Extraction Method: Principal Component Analysis.

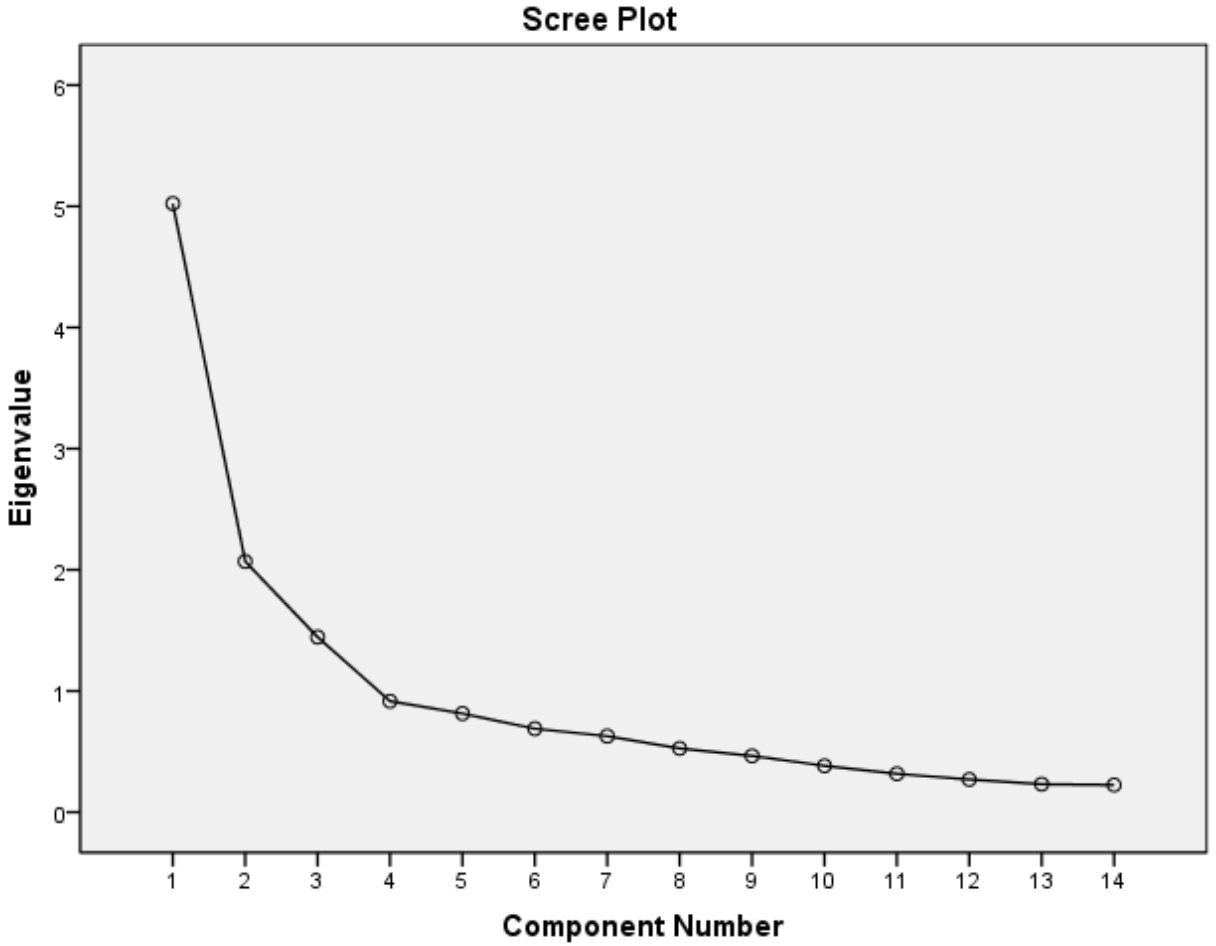

Scree Plot
Eigenvalue
0
1
2
3
4
5
6
1
2
3
4
5
6
7
8
9
10
11
12
Component Number

# Appendix M10: Total Variance Explained and Scree Plot for Manager's Ambidexterity Items

**Total Variance Explained**

| Component | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings | | |
|---|---|---|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 5.023 | 35.877 | 35.877 | 5.023 | 35.877 | 35.877 | 3.839 | 27.422 | 27.422 |
| 2 | 2.069 | 14.781 | 50.659 | 2.069 | 14.781 | 50.659 | 3.253 | 23.237 | 50.659 |
| 3 | 1.445 | 10.321 | 60.980 | | | | | | |
| 4 | .916 | 6.541 | 67.521 | | | | | | |
| 5 | .814 | 5.815 | 73.336 | | | | | | |
| 6 | .689 | 4.919 | 78.255 | | | | | | |
| 7 | .628 | 4.482 | 82.737 | | | | | | |
| 8 | .526 | 3.760 | 86.497 | | | | | | |
| 9 | .465 | 3.322 | 89.819 | | | | | | |
| 10 | .383 | 2.737 | 92.556 | | | | | | |
| 11 | .317 | 2.261 | 94.817 | | | | | | |
| 12 | .270 | 1.927 | 96.744 | | | | | | |
| 13 | .231 | 1.652 | 98.396 | | | | | | |
| 14 | .225 | 1.604 | 100.000 | | | | | | |

Extraction Method: Principal Component Analysis.

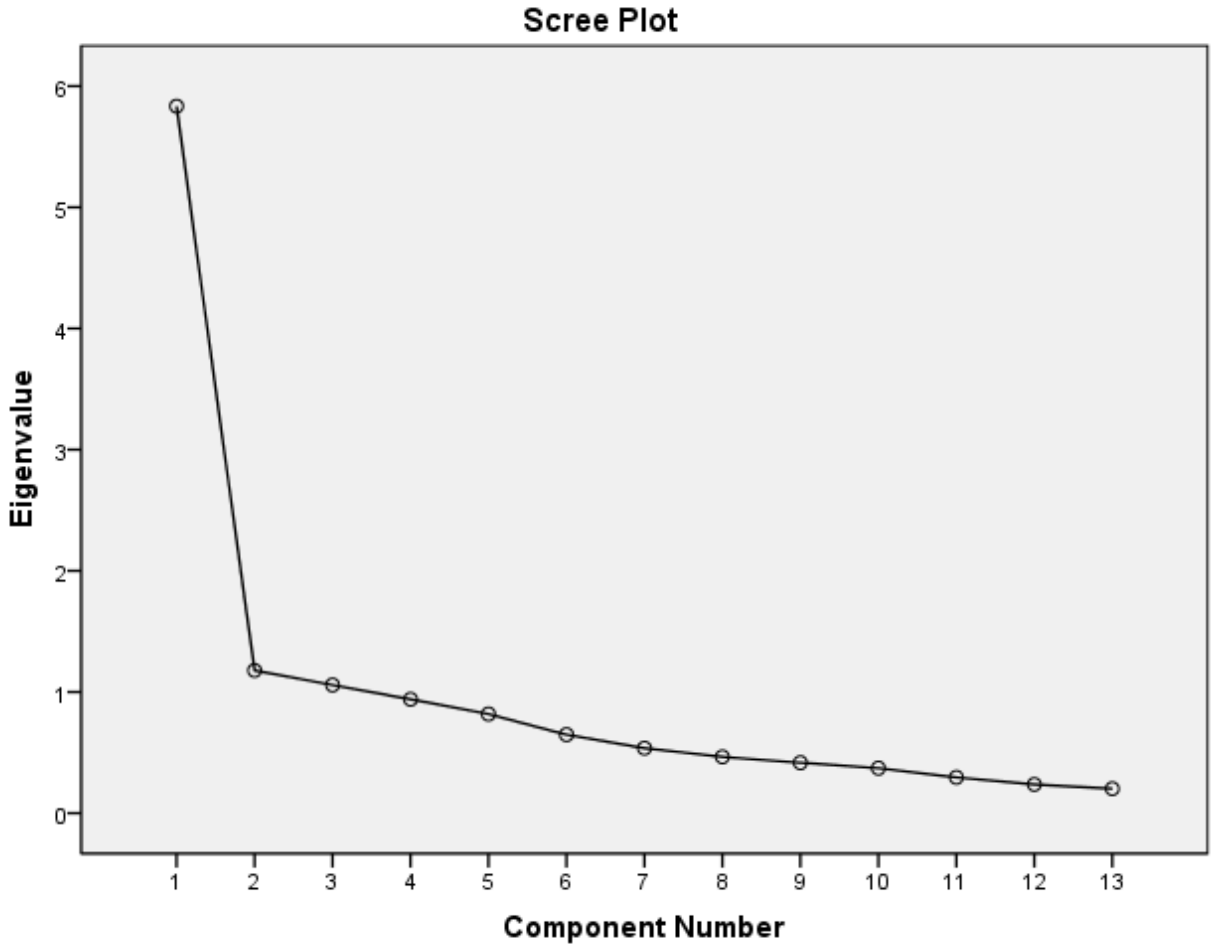

Scree Plot
Eigenvalue
0
1
2
3
4
5
6
1
2
3
4
5
6
7
8
9
10
11
12
13
14
Component Number

# Appendix M11: Total Variance Explained and Scree Plot for Customer Engagement Items

**Total Variance Explained**

| Component | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings | | |
|---|---|---|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 5.835 | 44.882 | 44.882 | 5.835 | 44.882 | 44.882 | 2.948 | 22.675 | 22.675 |
| 2 | 1.178 | 9.061 | 53.943 | 1.178 | 9.061 | 53.943 | 2.564 | 19.721 | 42.396 |
| 3 | 1.058 | 8.136 | 62.079 | 1.058 | 8.136 | 62.079 | 2.559 | 19.683 | 62.079 |
| 4 | .940 | 7.229 | 69.308 | | | | | | |
| 5 | .818 | 6.293 | 75.600 | | | | | | |
| 6 | .648 | 4.983 | 80.584 | | | | | | |
| 7 | .536 | 4.126 | 84.710 | | | | | | |
| 8 | .465 | 3.574 | 88.284 | | | | | | |
| 9 | .417 | 3.205 | 91.489 | | | | | | |
| 10 | .371 | 2.856 | 94.345 | | | | | | |
| 11 | .296 | 2.274 | 96.619 | | | | | | |
| 12 | .237 | 1.826 | 98.445 | | | | | | |
| 13 | .202 | 1.555 | 100.000 | | | | | | |

Extraction Method: Principal Component Analysis.


Scree Plot
Eigenvalue
0
1
2
3
4
5
6
1
2
3
4
5
6
7
8
9
10
11
12
13
Component Number

# Appendix M12: Total Variance Explained and Scree Plot for Organisational Performance

**Total Variance Explained**

| Component | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | |
|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 4.401 | 73.355 | 73.355 | 4.401 | 73.355 | 73.355 |
| 2 | .545 | 9.086 | 82.441 | | | |
| 3 | .365 | 6.088 | 88.529 | | | |
| 4 | .283 | 4.724 | 93.253 | | | |
| 5 | .218 | 3.633 | 96.886 | | | |
| 6 | .187 | 3.114 | 100.000 | | | |

Extraction Method: Principal Component Analysis.