
Doctoral

Built Environment

2020

A FRAMEWORK FOR STRATEGIC DECISION-MAKING IN CONSTRUCTION PROFESSIONAL SERVICE FIRMS

Oluwasegun O. Seriki

Technological University Dublin, oluwasegun.seriki@tudublin.ie

Follow this and additional works at: <https://arrow.tudublin.ie/builtdoc>



Part of the [Civil and Environmental Engineering Commons](#)

Recommended Citation

SERIKI, O. (2020) A FRAMEWORK FOR STRATEGIC DECISION-MAKING IN CONSTRUCTION PROFESSIONAL SERVICE FIRMS , Doctoral Thesis, Technological University Dublin. doi:10.21427/bnfp-zt49

This Theses, Ph.D is brought to you for free and open access by the Built Environment at ARROW@TU Dublin. It has been accepted for inclusion in Doctoral by an authorized administrator of ARROW@TU Dublin. For more information, please contact arrow.admin@tudublin.ie, aisling.coyne@tudublin.ie, vera.kilshaw@tudublin.ie.

**A FRAMEWORK FOR STRATEGIC DECISION-MAKING IN
CONSTRUCTION PROFESSIONAL SERVICE FIRMS**

By

OLUWASEGUN OLUWASEYI SERIKI (Dip.; B.Eng.; M.Eng.)

Thesis Presented as part of the requirements for the award of

DOCTOR OF PHILOSOPHY

School of Surveying and Construction Management



College of Engineering and the Built Environment

Technological University Dublin, City Campus.

2020

Thesis Supervisor: Dr. Róisín Murphy BA (hons); PDES; MBS; MSc.; DBA

ABSTRACT

The construction sector plays a crucial role in the global economy, having critical importance to economic growth, social inclusion and employment. In Ireland, the sector generates a combined value of over €20 billion per annum, with 144,000 persons directly employed in the sector, which is forecasted to grow by 3.9% in 2019. The sector is also hugely complex due to the diverse range of output, from productive infrastructure (roads, railways etc.) to residential (both public and private) and the numerous stakeholders involved throughout its intricate supply chain. The sector is highly susceptible to cyclical economic patterns, making it more challenging to ascertain the specific characteristics of how firms make decisions within it. Despite going through a prolonged, deep recession, the Irish economy has returned to sustained growth, necessitating research into the strategic decision-making process within the construction sector to guard against future negative impacts of economic fluctuation. Strategy is a well-established management discipline; however, the nature of strategic decision-making process within highly knowledge-intensive Professional Service Firms (PSFs) has received little empirical attention, despite the firms comprising a sizable portion of those employed in the construction sector. This study bridges the perceptible gap in the strategic decision-making process in construction PSF's, who collaborate on complex projects but are not well understood on a strategic level. The study explores strategic decision-making across three key professions, with participation from members of the Royal Institute of the Architects of Ireland (RIAI), the Association of Consulting Engineers Ireland (ACEI) and the Society of Chartered Surveyors Ireland (SCSI) via a mixed methods study (Quantitative: 225 firms; Qualitative: 27 firms). The findings present, for the first time, a multidisciplinary insight into the strategic decision-making process and resulting strategic

choices made by construction PSFs in Ireland. The central implication of the study is that it presents, for the first time, a strategy-as-practice based framework for strategic decision-making within construction PSFs, bridging the gap in knowledge about strategy formulation in practice within construction. The framework also acts as a guide for practitioners, guiding them to take into account individual organisational contexts in the strategic decision making process, adding to the conversation around collaboration within construction. Until organisational and profession specific contexts are understood, it will be hard to advance to measuring performance of strategic decisions in CPSFs, which is considered “hard to measure” due to intangibility of output, the amount of repeat business generated presents a veritable alternative for strategic decision quality measurement from an industry viewpoint. Lastly, the SAP framework presents an opportunity for the overall construction sector to explore the social dimensions of their decision making process. Practitioners within the sector can now identify the right questions to ask themselves when designing overall industry-wide strategy.

DEDICATION

Dedicated to my Lord & Saviour, Jesus Christ. You made this possible.

To my wife and guiding light, Taiwo, your price is far above rubies.

Dr. Róisín Murphy, your guidance and mentoring are invaluable in this journey. I am by
far, the better for it.

ACKNOWLEDGEMENTS

The process of my PhD has been a rewarding one, and I have enjoyed support from several quarters internal to TU Dublin and external to it. First, I would like to acknowledge the support of my supervisor, Dr Róisín Murphy, who laboured tirelessly to ensure I got the PhD completed to the highest quality. Next, I acknowledge the support of Mr Tom Dunne and Dr Alan Hore, who so gracefully supported me morally during the PhD. Other lecturers within the department who have supported me in one way or another, I say thank you. Next, I like to thank the Society of Chartered Surveyors Ireland (SCSI) for making this research possible by granting access to their members to facilitate the data gathering phase of this work. My profound thanks to Mr. James Lonergan of the SCSI his support. My deepest thanks also goes out to Dr. Sarah Ingle of the Association of Consulting Engineers Ireland (ACEI) for helping me secure access to the ACEI members for the survey. In addition, I thank Kathryn Meghan of the Royal Institute of Architects Ireland (RIAI) for her help with the survey of the architects. I will also like to acknowledge the financial support provided by the SCSI and RIAI towards conference presentations from the study.

My parents, Elder Samson and Deaconess Abiodun Seriki, who have sacrificed so much, *e seun gaani*. My colleagues, Eoghan, Michael, & Ahmed, I cannot thank you enough.

Lastly, every young person who has had a rough road in life, struggling to get ahead. Keep going. You will get there surely.

Eruchabanae Nophresniste.

DECLARATION STATEMENT

I certify that this thesis which I now submit for examination for the award of _____, is entirely my own work and has not been taken from the work of others, save and to the extent that such work has been cited and acknowledged within the text of my work.

This thesis was prepared according to the regulations for graduate study by research of the Technological University Dublin and has not been submitted in whole or in part for another award in any other third-level institution.

The work reported on in this thesis conforms to the principles and requirements of the TU Dublin's guidelines for ethics in research.

TU Dublin has permission to keep, lend or copy this thesis in whole or in part, on condition that any such use of the material of the thesis is duly acknowledged.

Signature _____ Date _____

Candidate: **Oluwasegun Oluwaseyi Seriki**

TABLE OF CONTENTS

ABSTRACT	i
DEDICATION.....	iii
ACKNOWLEDGEMENTS	iv
DECLARATION STATEMENT	v
TABLE OF CONTENTS.....	vi
LIST OF TABLES.....	xiii
LIST OF FIGURES	xvi
LIST OF ABBREVIATIONS.....	xviii
PEER REVIEWED CONFERENCE PAPERS	xx
LIST OF PRESENTATIONS DELIVERED BASED ON THIS RESEARCH.....	xxi
LIST OF EMPLOYABILITY SKILLS AND DISCIPLINE SPECIFIC SKILLS TRAINING	xxii
PART I: INTRODUCTION AND BACKGROUND TO THE THESIS	xxiii
1. INTRODUCTION.....	1
1.1 Introduction	1
1.2 Background to the Study	1
1.3 Research Justification, Rationale and Problem.....	5
1.4 Research Questions, Aims and Objectives	8
1.5 Scope of the Study.....	10
1.6 The PROD ² UCT Dissertation Model	11
1.7 Research Methodology	12
1.8 Thesis Outline	13
1.9 Models Vs Frameworks	17
1.10 Summary	19
PART II: LITERATURE REVIEW AND IDENTIFICATION OF GAPS (CHAPTERS 2-5).....	20

2. THE IRISH CONSTRUCTION INDUSTRY	21
2.1 Introduction.....	21
2.2 Analysing the Business Environment.....	21
2.3 Construction Sector in the Global Context.....	23
2.4 The Construction Industry and the Irish Economy.....	24
2.4.1 Contributions to The Economy.....	25
2.4.2 The Construction Industry and Employment.....	26
2.4.3 The Nature of The Irish Construction Industry.....	29
2.4.4 Analysis of the Business Environment: Porter’s Five Forces Analysis	33
2.5 Summary	37
3. STRATEGY AND STRATEGIC MANAGEMENT.....	39
3.1 Introduction	39
3.2 Defining Strategy	40
3.3 Alternative Strategy Perspectives/Evolution Of Strategy	45
3.3.1 Resource-Based View of Strategy	46
3.3.2 The Knowledge-Based View of the Firm (KBV).....	48
3.3.3 The Dynamic Capabilities View (DCV).....	50
3.3.4 The Market Based View (MBV).....	51
3.3.5 Strategy-As-Practice	52
3.4 Conducting Strategy Analysis.....	55
3.5 Strategic Decision Making Process Characteristics	58
3.5.1 Formality of Planning and Approach.....	58
3.5.2 Strategic Types.....	59
3.5.3 Risk Attitude	61
3.5.4 Planning Horizon	62
3.5.5 Dimensions of Strategic Decision-Making Process	63
3.6 Strategic choice	67
3.6.1 Corporate-Level Strategy.....	68
3.6.2 Business-Level Strategies.....	70
3.7 Strategic Management of PSFs.....	73
3.8 Summary	75
4. STRATEGIC DECISION-MAKING PROCESS IN CONSTRUCTION PROFESSIONAL SERVICE FIRMS (CPSF’s).....	77

4.1	Introduction	77
4.2	Strategy in Construction	78
4.3	Strategy in the Irish Construction Industry	81
4.4	Nature of Construction Professional Service Firms.....	82
4.5	PSFs and Knowledge Intensity.....	85
4.5.1	Knowledge Acquisition in Construction PSFs: Deliberate or Contagion-Driven	86
4.5.2	Social Contagion and Learning in Construction PSF's.....	87
4.5.3	Professional Associations/Communities of Practice (CoP)	89
4.6	Summary	91
5.	SYNOPSIS OF LITERATURE	93
5.1	Introduction.....	93
5.2.	Merging Three Strands of Investigation.....	95
5.3	Gaps in the Existing Knowledge Base	97
	PART III: RESEARCH DESIGN AND METHODOLOGY.....	100
6.	RESEARCH METHODOLOGY.....	101
6.1	Introduction.....	101
6.2	Restating The Research Question, Aim and Objectives.....	101
6.3	Research Philosophy and Methods.....	102
6.3.1	Research Purpose	103
6.3.2	Ontological, epistemological and axiological assumptions	105
6.3.3	Research Philosophy.....	107
6.3.4	Research Approach	112
6.3.5	Research Strategy.....	113
6.3.6	Research Choice/Method	115
6.3.7	Time Horizon	121
6.3.8	Techniques and Procedures	121
6.4	Research design.....	122
6.4.1	Mixed Methods Questionnaire Design	122
6.4.2	Pilot study	130
6.4.3	Sampling	136
6.5	Data Collection	142
6.5.1	Quantitative Data Collection.....	142

6.5.2 Qualitative Data Collection.....	144
6.6 Data Analysis.....	146
6.6.1 Quantitative Data Analysis.....	147
6.6.2 Qualitative Data Analysis.....	148
6.7 Research Ethics.....	163
6.8 Data Reliability.....	164
6.9 Methodological Limitations.....	165
6.10 Summary.....	166
PART IV: DATA ANALYSIS AND DISCUSSION OF FINDINGS.....	167
7. QUANTITATIVE DATA ANALYSIS AND DISCUSSION.....	168
7.1 Introduction.....	168
7.2 Demographic Data.....	170
7.2.1 Company Size, Ownership Structure and Years in Operation.....	170
7.2.2 Sectors Serviced and Services Provided.....	172
7.3 Strategic Decision-Making Characteristics.....	180
7.3.1 Formality of Planning Process and Approach to Strategy.....	180
7.3.2 Strategic Type.....	184
7.3.3 Risk Attitude.....	188
7.3.4 Time Horizon.....	190
7.3.5 Strategic Decision Making Dimensions.....	191
7.4 Strategic Choice.....	195
7.4.1 Corporate-Level Strategy.....	195
7.4.2 Business Level Strategy.....	202
7.5 Knowledge Acquisition in AES Firms.....	205
7.6 Multi-Level Analysis.....	209
7.6.1 Size.....	210
7.6.2 Ownership Structure.....	217
7.6.3 Firm Age.....	225
7.7 Summary Of Quantitative Data.....	233
8. QUALITATIVE DATA ANALYSIS AND DISCUSSION.....	235
8.1 Introduction.....	235
8.2 The Business Environment.....	236
8.2.1 Past (Period 2009-2013).....	237

8.2.2 Current (Economic Growth).....	239
8.2.3 Future (Post-2019)	241
8.3 Strategic Decision Making Characteristics	243
8.3.1 Approach To Strategy.....	243
8.3.2 Formality Of Planning (written or not).....	246
8.3.3 Strategic Type.....	248
8.3.4 Risk Attitude	250
8.3.5 Time Horizon	254
8.3.6 Strategic Decision Making Dimensions	255
8.4 Strategic choice	277
8.4.1 Corporate Strategy.....	280
8.4.2 Business Level Strategy.....	288
8.5 Knowledge Acquisition.....	291
8.6 Strategy-As-Practice	293
8.6.1 Practices	293
8.6.2 Practitioners	296
8.6.3 Praxis.....	298
8.7 Comparative Analysis Across Stages I & II.....	302
8.8 Summary	303
9. DEVELOPMENT OF FRAMEWORK AND OTHER CONTRIBUTIONS.....	307
9.1 Introduction.....	307
9.2 Framework Development	307
9.2.1 Step 1.....	307
9.2.2 Step 2.....	309
9.2.3 Step 3.....	309
9.2.4 Step 4.....	311
9.3 Validation of SAP Framework.....	311
PART V: RESEARCH CONTRIBUTIONS, CONCLUSIONS & RECOMMENDATIONS.....	316
10. CONCLUSIONS AND RECOMMENDATIONS.....	317
10.1 Introduction	317
10.2 Research objectives and how they have been met.....	318
10.3 Contributions of the Research.....	322

10.3.1 Contribution to Knowledge.....	322
10.3.2 Theoretical and Conceptual Contributions	323
10.3.3 Methodological Contribution	326
10.3.4 Contribution to Practioners / Professionals.....	327
10.3.5 Contribution to Industry.....	328
10.4 Limitations.....	329
10.5 Future research	331
10.5.1 Political Context	332
10.5.2 Additional Strategy Process Characteristics	332
10.5.3 Strategy Process Characteristics and Firm Performance.....	333
10.5.4 Conceptual and Methodological Recommendations	333
10.5.5 Investigate Technology in Strategic Decision-Making	334
10.5.6 International Comparisons	335
REFERENCES.....	336
APPENDICES.....	367
Appendix A- Full Online survey (Sample).....	367
Appendix B-Interview protocol matrix for qualitative stage.....	380
Appendix C- Full Interview Protocol for qualitative stage.....	381
Appendix D- TU Dublin Ethical approval application.....	385
Appendix E-Full list of qualitative interview respondents.....	387
Appendix F-Informed consent page for online survey	389
Appendix G- Invitation email for Stage I (Quantitative study-QS)	391
Appendix H- Categorisation of codes table for qualitative stage	393
Appendix I- Data reduction of qualitative phase (All nodes).....	396
Appendix J-Full list of open codes developed in qualitative stage	399
Appendix K-Sample Analytical Memo (AM 16)	402
Appendix L- Social Contagion Framework by Seriki & Murphy (2018)	404
Appendix M-Quantitative data on small firms	406
Appendix N-Quantitative data on Medium-sized firms.....	408
Appendix O-Quantitative data on Large-sized firms	410
Appendix P-Quantitative data on Sole proprietorships	412
Appendix Q-Quantitative data on Partnerships.....	414
Appendix R-Quantitative data on public limited companies	416

Appendix S- Quantitative data on Private limited firms	418
Appendix T-Quantitative data on firms who are part of Global Consortium.....	420
Appendix U-Quantitative data on firms < 5 years of age.....	422
Appendix V-Quantitative data on firms aged between 6-10 years	424
Appendix W-Quantitative data on firms aged 11-15 years.....	426
Appendix X-Quantitative data on firms aged above 15 years.....	428
Appendix Y- Augmented SAP framework for strategy formulation	430
Appendix Z- Data from Framework validation phase	433

LIST OF TABLES

Table 1 Construction Enterprises (Number) by Persons Engaged and Year	29
Table 2 Evolution of strategy	41
Table 3 Selected Views of strategy	45
Table 4 Strategy tools used in Construction (adapted from Wolf and Floyd, 2013)	80
Table 5 Strategic Decision-making process characteristics/practices and relevant author(s)	96
Table 6 Research Purpose	103
Table 7 Analysis of the Six Philosophical dimensions in the research onion.....	108
Table 8 Pros and Cons of Research strategies	114
Table 9 Pros and Cons of Survey strategy	115
Table 10 Philosophical underpinnings of each research component	120
Table 11 Survey themes and related authors.....	124
Table 12 Sections of Quantitative Questionnaire.....	125
Table 13 Example of Interview Protocol Matrix	127
Table 14 First page of qualitative interview protocol	129
Table 15 Feedback from Pilot test respondents	131
Table 16 Activity Checklist for Close Reading of Interview Protocol (Adapted from Montoya, 2016).....	134
Table 17 Sampling methods and their characteristics.....	139
Table 18 Response rates per profession (Quantitative Strand)	143
Table 19 List of respondents in the qualitative phase	145
Table 20 A review of recent PhD studies within strategy domain in construction and methods employed	147
Table 21 Phases and Process involved in Qualitative Analysis - Adapted from Miles & Huberman (1994). Analytical Hierarchy to data analysis.....	153
Table 22 Snippet of categorisation of codes in NVivo	157
Table 23 Data Reduction phase table.....	158
Table 24 Yin (2003)'s data validity process (cited in Seriki, 2007).....	161
Table 25 Steps to ensure reliability of findings	165
Table 26 Demography of respondents' organisations	170

Table 27 Areas of work in Architectural Practices	173
Table 28 Architectural practices: services offered.....	173
Table 29 Consulting Engineering firms: Areas of work	175
Table 30 Consulting Engineering firms: Services Offered	175
Table 31 QS Firms: Areas of work	177
Table 32 QS Firms: Service Offerings.....	177
Table 33 Formality of planning process.....	181
Table 34 Approach to strategy by AES practices	182
Table 35 Strategic types of AES firms.....	185
Table 36 Attitudes to Risk of AES firms	188
Table 37 Planning horizon across AES firms	190
Table 38 Descriptive statistics of dimensions of the decision-making process	192
Table 39 Corporate Strategy in AES firms	195
Table 40 Changes in the corporate strategy of QS Firms	198
Table 41 Changes in the corporate strategy of Consulting Engineering firms	199
Table 42 Changes in the corporate strategy of Architectural practices	200
Table 43 Growth strategies in QS firms.....	201
Table 44 Business strategic choices in AES	202
Table 45 Changes on Business strategic choices of AES firms.....	204
Table 46 Process-related metrics for knowledge acquisition.....	206
Table 47 Variables for knowledge acquisition for strategic decision-making.....	207
Table 48 Overview of the strategy process in small firms.....	210
Table 49 Overview of the strategy process in Medium firms.....	212
Table 50 Overview of the strategy process in large-sized firms.....	214
Table 51 Summary table for strategy parameters for CPSFS based on company size (Predominant measures used for generalisation)	216
Table 52 Overview of the strategy process in sole proprietorship firms	217
Table 53 Overview of the strategy process in partnerships	219
Table 54 Overview of the strategy process in public limited companies	220
Table 55 Overview of the strategy process in private limited companies	221
Table 56 Overview of the strategy process in GC firms.....	223
Table 57 Summary table for strategy parameters for CPSFS based on ownership	

structure (Predominant measures used for generalisation)	224
Table 58 Overview of the strategy process in firms < 5 years old (recovery/stability)	225
Table 59 Overview of the strategy process in survivor firms	227
Table 60 Overview of the strategy process in firms established during the peak.....	228
Table 61 Overview of the strategy process in firms established during Celtic tiger years	230
Table 62 Comparative analysis of firm age of CPSFs	232
Table 63 Key comparisons of all three professions (AES) based on the highest-ranked values	233
Table 64 Current Issues in the Irish Construction Business environment	240
Table 65 Critical determinants in the Future Irish Construction Industry	241
Table 66 Stage II: Approach to strategy	244
Table 67 Insights into approach to strategy	245
Table 68 Formality of Planning	246
Table 69 Stage II: Miles and Snow (1978) Typologies	249
Table 70 Stage II: Risk Attitude.....	251
Table 71 Stage II: Time Horizon	255
Table 72 NVivo Code strategic Human Resourcing.....	266
Table 73 Professionalism and Professional Associations	270
Table 74 Industry analysis node (NVivo Export)	275
Table 75 NVivo Code for "Strategic Choice" Export.....	279
Table 76 Stage II: Corporate Strategy.....	281
Table 77 NVivo Code to "Collaborations"	283
Table 78 Stage II: Business Strategy	289
Table 79 Knowledge acquisition metrics.....	291
Table 80 Strategy practices in Irish Construction PSFs.....	294
Table 81 Strategy practitioners in construction PSFs	297
Table 82 Strategy Praxis elements of Construction PSFs.....	300
Table 83 Comparative analysis chart	302

LIST OF FIGURES

Figure 1 Prod2UCT Dissertation Model (Holt & Goulding, 2017).....	11
Figure 2 Thesis Outline.....	15
Figure 3 Exploring the external environment (Hunger & Wheelan, 2003, p.34)	22
Figure 4 Value of Construction output between 2008-2018 (Source: Linesight, 2019).26	
Figure 5 Person aged 15 years and over in Employment (Source: CSO, 2019).....	27
Figure 6 Irish construction industry (Murphy, 2016)	30
Figure 7 Analysis of the strategy definition by Oyewobi (2014).....	44
Figure 8 VRIO Framework (adapted from Barney, 1997).....	48
Figure 9 Structural outline of strategy formulation process.....	57
Figure 10 Porter's (1980, 1985) three generic strategies model.....	71
Figure 11 Chapter 4 outline	77
Figure 12 Overview of the entire literature review	94
Figure 13 Merging three strands of investigation	95
Figure 14 Research Onion (based on Saunders et al., 2009)	105
Figure 15 Sequence for explanatory sequential design for mixed methods.....	119
Figure 16 Data reduction phase in NVivo.....	159
Figure 17 Map of the quantitative analysis stage of the study	168
Figure 18 Changes in QS service offerings	178
Figure 19 Changes in Corporate Strategy (Quantitative).....	197
Figure 20 Map of the quantitative analysis stage of the study.....	235
Figure 21 Recession node coded into node 1.4 (Appendix I).....	238
Figure 22 Approach to strategy.....	243
Figure 23 Stage II: Risk Attitude	252
Figure 24 Resourcing	259
Figure 25 Strategic themes.....	261
Figure 26 Performance themes.....	262
Figure 27 Perception of professional associations/bodies	268
Figure 28 Enabling and inhibiting policies of Government.....	271
Figure 29 Stage II: Competitor analysis node explanation	273
Figure 30 Growth strategies in construction PSFs (Stage II).....	286

Figure 31 Framework for Strategy formation using SAP lenses310

Figure 32 SAP Framework Validation: Relevance.....313

Figure 33 SAP Framework Validation: Reflection of strategic decision-making in
practice 314

LIST OF ABBREVIATIONS

ACEI	Association of Consulting Engineers Ireland
AEC	Architectural, Engineering and Surveying
AM	Analytical Memo
ARCH	Architectural Practice
AVPI	Average Tender Price Index
BOP	Balance of Payments
CIF	Construction Industry Federation
CIC	Construction Industry Council
CITA	Construction Information Technology Alliance
CPI	Consumer Price Index
COMB	Combination
CONS	Consolidation
COP	Communities of Practice
CSO	Central Statistics Office
DCV	Dynamic Capabilities View
DPER	Department of Public Expenditure and Reform
DOWN	Downsizing
ENG	Consulting Engineering Practice
ESRI	Economic and Social Research Institute
EU	European Union
EXP	Expansion
FDI	Foreign Direct Investment
GC	Global Consortium
GDP	Gross Domestic Product
GDPR	General Data Protection Regulations
GNP	Gross National Product
HEI	Higher Educational Institution

HICP	Harmonised Index of Consumer Prices
IPR	Interview Protocol Refinement
IRD	Internal Resource-Driven
KA	Knowledge Acquisition
KBV	Knowledge Based View
MBV	Market Based View
NAMA	National Asset Management Agency
OECD	Organisation for Economic Co-Operation and Development
OPW	Office of Public Works
PPP	Public-Private Partnership
PQS	Professional Quantity Surveying Firm
PSF	Professional Service Firm
QUANT	Quantitative Analysis
QUAL	Qualitative Analysis
QS	Quantity Surveying
SAP	Strategy-As-Practice
SCSI	Society of Chartered Surveyors Ireland
SM	Strategic Management
SP	Strategic Partnership
RBV	Resource-Based View
RIAI	The Royal Institution of the Architects of Ireland
UN	United Nations
US	United States
UK	United Kingdom

PEER REVIEWED CONFERENCE PAPERS

Five peer-reviewed papers have been published based on the findings of the research within this PhD. The papers are as follows:

1. Seriki, O. (2016), *Evaluating the AfDB “High 5’s” : Bifocal lenses assessment via citizen participation*. Paper presented at the African Development Bank HQ, Abidjan, Cote d’Ivoire, 2016.
2. Seriki O. & Murphy, R. (2017). *Strategic Management in Irish Construction Professional Service Firms: A Comparative Study across Professions* (906), British Academy of Management Annual Conference 2017, Coventry, UK. Sept. 5-7th, 2017
3. Seriki O. & Murphy, R. (2018). *Social Contagion and Knowledge Acquisition In Construction Professional Service Firms*, RICS COBRA 2018 The Construction, Building and Real Estate Research Conference of the Royal Institution of Chartered Surveyors, London, 23-25 Apr 2018.
4. Seriki O. & Murphy, R. (2018). *A Comparative Analysis of Key Elements Of The Strategic Decision Making Process Across Construction Professional Service Firms: Evidence From The Irish Construction Industry*, Association Of Researchers In Construction Management (ARCOM) Conference, 2018.
5. Seriki O. & Murphy, R. (2019). *Competitive Strategies in Small And Medium Sized Enterprises (SME's): A Cross-Case Analysis Of Irish Construction Professional Service Firms*; Association Of Researchers In Construction Management (ARCOM) Conference, 2019.

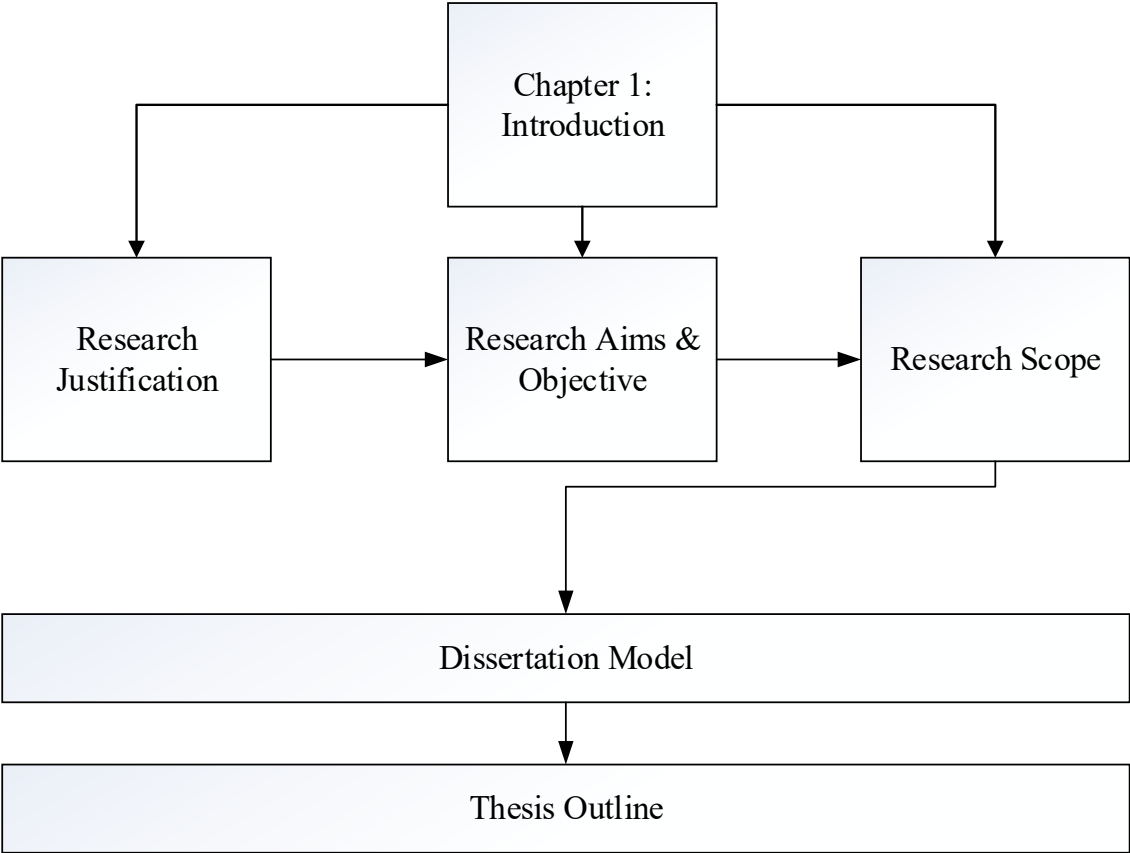
LIST OF PRESENTATIONS DELIVERED BASED ON THIS RESEARCH

- *Strategic Management Implementation in Irish Construction Professional Service Firms: A Comparative Analysis Across Professions*, Paper presented at the Doctoral Colloquium of the Irish Academy of Management 2016, University College Dublin, Ireland (Paper ID: 281).
- *Keeping up with the Joneses: social contagion and knowledge acquisition in Irish construction professional service firms*, Paper presented at the 09th Annual Graduate Research Symposium, Technological University Dublin, Ireland. 1st November, 2018.
- *The Strategy Process in Irish Architectural Practices*, Presentation to RIAI Governing Council 14th December 2018

LIST OF EMPLOYABILITY SKILLS AND DISCIPLINE SPECIFIC SKILLS TRAINING

1. Research Methods GRSO 1001
2. Business Research methods BSRM 1001
3. Innovation and Knowledge Management MECH 9002
4. Strategic management. MGMT 9103
5. Strategic Operations Management SCMT 3001
6. Organisational Culture and Learning SOC9005
7. Construction Economics RECE9130
8. Project Management PRJM 9000
9. Data Visualisation SPEC 9995

PART I: INTRODUCTION AND BACKGROUND TO THE THESIS



1. INTRODUCTION

1.1 Introduction

The central focus of strategy research is to uncover how people design and get on with their work within organisations, with strategy being central to an organisation's survival within a given business environment. It is not unusual to see organisations perform sub-optimally due to the inability to design strategy (Gupta, 1987), despite having a robust and well thought out business plan. In strategy research, it is important to gain a clear understanding of the competitive behaviour and survival of firms during economic cycles, particularly construction practitioners and scholars (Tansey, Spillane & Meng, 2014). This is because of the highly competitive and turbulent environment in which construction firms compete and do business (Price & Newson, 2003), making the subject of a firm's competitive behaviour a central topic within all sectors in construction.

How then does strategising occur in construction organisations? This chapter introduces the research investigation, starting with a background to the study and concluding with the research outline. The research justification, question, aims and objectives are also explained within the chapter to provide context and rationale to the study.

1.2 Background to the Study

The construction industry is of huge importance to every economy, given the contribution to economic output, employment and the provision of the built environment and infrastructure required for economic growth. In Ireland, the sector directly employs 144,000 people and contributes €20bn or 9% of Gross Domestic Product (GDP) (Central Statistics Office, 2019a). In the last decade, the Irish economy has returned to growth, following a deep, lengthy period of recession, which had devastating consequences on

the construction sector (Murphy, 2013). The Irish Government has revealed its commitment to capital investment in the economy, and the construction sector, through the publication of Project Ireland 2040 (Gov.ie, 2018) and, in particular, the proposed expenditure of €116 billion over the ten years specified in the National Development Plan (NDP), 2018-2027. The planned expenditure demonstrates a strategic commitment for the sector as a whole; however, the strategic perspective of firms operating within the construction sector remains underexplored.

The construction industry is hugely complex due to the diverse range of output, from productive infrastructure (roads, railways etc.) to residential (both public and private) and the numerous stakeholders involved throughout its intricate supply chain (Aaltonen, 2007; Farmer, 2016). The complexity of the sector makes it more challenging to ascertain the specific characteristics of how firms make decisions within such a diverse, cyclical sector (Murphy, 2016).

Little is known empirically about how strategic decisions are made within construction in Ireland; therefore, the factors influencing the process remain unclear. Given the importance of the construction sector to the Irish economy, there is a clear need to understand not only the process of decision-making, but also the choices made by firms operating within the sector. What is clear, given the reliance of the Irish economy on the sector, is that now, more than ever, firms must be strategic in their decision making for sustained competitive advantage given the cyclical nature of the sector (Oyewobi, 2014).

Planning for the future or ‘visioneering’ is what is known as “strategic management” (Johnson & Scholes, 2012). The history of strategic management theory can be traced to military origins (Bracker, 1980), but in more recent times the concept has been applied to

understanding relationships between organisational structure and planning (Chandler, 1962). Strategic management has evolved from being a practice of military commanders and corporate executives into a major field of management science (Cheah & Garvin, 2004). Strategic management is considered essential for the survival of any organisation, with the process of selecting, adjusting and improving business strategies considered a complex art (Teece, 2010).

Strategy has a broad range of definitions, including Olsen et al.'s (2008) defining strategy as “...*the ability of the management of the firm to properly align the firm with the forces driving change in the environment in which the firm competes*” (p. 6). This ability to align forces external to the company (which the firm cannot control), with that which it can control, comes together in strategic management (Barney, 1995).

Commonly, research in strategic management is broadly divided into strategy content (Pettigrew, 1985) and process streams (Mintzberg & Waters, 1985), however more recently, the concept of strategy-as-practice has emerged as a new stream of inquiry led by seminal authors such as Whittington (2002) and Jarzabkowski (2005). The strategy content stream of research emphasises the importance of configuring firm resources for performance, while process explains ‘why’ and ‘how’ strategy has been realised with the end of assessing whether alternative courses may lead to different and better outcomes (Sminia, 2009). The more recent stream called “strategy-as-practice” looks at the strategists themselves, focusing on micro-processes to understand how managers’ day-to-day interactions affect the strategic direction of the organisation (Jarzabkowski 2005; Jarzabkowski et al. 2007; Jarzabkowski and Spee 2009).

The highly competitive and turbulent environment, in which construction firms compete,

makes the analysis of strategic decision-making and competitive behaviour complex, but no less critical (Price & Newson, 2003). However, a substantial portion of empirical inquisition on strategic management has focused on the manufacturing sector, with considerably fewer focusing on construction (Hillebrandt and Cannon, 1994; Green et al., 2008). Recent calls for rethinking strategy within the construction sector have been made in the Farmer Review of the UK Construction industry (2016) themed “Modernise or Die” with similar calls by McKinsey Global Institute (MGI, 2015) regarding the need for construction industry professionals to become more aware of trends shaping the industry and business. In the same vein, the World Economic Forum (WEF) report on “Shaping the Future of Construction” stressed the need for breakthroughs in strategic thinking for the construction sector.

Insight into the strategic management of construction firms globally is heavily concentrated on contractor organisations, for example, in China (Yang & Yeh, 2009), South Africa (Oyewobi, 2014), Sweden (Lowstedt, 2015) and Ireland (Tansey, 2018), and considerably less insight has been garnered in relation to Construction Professional Service Firms (CPSFs) (Murphy 2013).

PSFs are highly knowledge-intensive and display somewhat different characteristics to industrial and manufacturing-based firms (Lowendahl, 2000). These characteristics include their knowledge intensive nature, intangible service offerings and high client interaction (Maister, 1997). Within the construction sector, PSFs play a fundamental role in the design, structure, costing and delivery of construction projects. Since the mid-1990s, there has been expanding academic literature on strategic management in the professional services firms (Aharoni, 1993; Maister, D.H 1993; Raelin & Coledge,

1995; Løwendahl, 2005), but limited inquiry into PSFs in construction. Several strategy studies related to PSFs have studied manufacturing companies (Sonntag, 2003; Papke-Shields et al., 2006) or in the public sector (for example, Hendrick, 2003; Poister & Streib, 2005) with limited inquiry into the dynamics of strategy in CPSFs. Most of the focus of earlier research has been on the manufacturing, finance or legal professions (Lai et al., 2007; Durugbo, 2013).

Many of the frameworks and models produced by researchers in traditional strategic management cannot be applied to construction PSFs, due to the intangibility of their output, custom-made solutions, close client interaction and idiosyncratic solutions they provide (Lowendahl, 2000). Thus, in order to analyse these firms, novel theoretical and methodological approaches will need to be developed in order to arrive at a way in which understanding the decision-making process within these firms can take shape.

1.3 Research Justification, Rationale and Problem

The importance of the construction sector in Ireland in terms of contribution to GDP, employment, increased productivity and whole lifecycle value, and global calls for increased collaboration among stakeholders (Farmer, 2016), necessitates a much clearer understanding of the strategic choices and competitive behaviour of construction firms during economic cycles (Tansey, 2018). The construction sector has been relatively hesitant about embracing change and rethinking its strategy (Egan Report, 1998; Ling et al., 2013). This unimpressive track record can be attributed to various internal and external challenges: the persistent fragmentation of the industry (Lowstedt, 2015), varied output of the sector (Yang et al., 2010), involvement of a wide range of skilled workforce (Fellows and Liu, 2013), and ambiguity in what constitutes the construction industry itself

(Ive and Gruneberg, 2000), to name a few.

Murphy (2011) pioneered research into the strategy processes in Irish CPSFs, specifically Quantity Surveying (QS) practices, and recommended that future studies adopt a cross-professional approach. Subsequent global calls for increased collaboration in construction (McKinsey, 2015; Farmer, 2016), and further compound this requirement. However, there remains scant evidence regarding the strategic decisions of collaborating organisations. There is a clear need to understand the strategic decisions process in these firms in order to arrive at a way in which collaborations can take shape effectively.

Several of the strategy studies in PSFs within construction are often limited to single professions, lacking a multidisciplinary context and presenting a silo-view to the topic. Within the literature, some studies focus only on Architectural firms (e.g. Oluwatayo & Amole, 2011; Flemming, 2011); QS firms (Jennings & Betts, 1996; Murphy, 2011); and engineering firms (Hecker, 1996; Jewell, 2011), with limited enquiries exploring the topic from a cross-professional context. Gaining insights from across the main professions will advance knowledge on how individual decision-making processes influence that of the entire sector, particularly since engineers, surveyors and architects comprise the largest professional workforce in construction. In line with the recommendations of recent studies that advocate the integration of individual perspectives in strategy research (Murphy, 2011; McQuillan, 2013), this study adopts a multifarious approach to the study of CPSFs.

At the time of writing, there exist only three major empirical studies in strategy among construction professionals (Murphy, 2011; Flemming, 2011; McQuillan, 2013) in Ireland, and these focused only on two key professions. To that end, this research seeks to address

this gap by investigating the strategy processes in Irish Quantity Surveying, Consultant Engineering and Architectural firms with particular emphasis on strategy processes in these firms and comparisons that exist across them. Khan & VanWynsberghe (2008) already argued for wider adoption of cross-case analysis within research, particularly synthesising them to mobilise knowledge from individual cases. This further justifies the proposition for adopting cross-professional analysis, as it allows the researcher accumulate knowledge from individual professions, compare and contrast them, and in doing so, produce new knowledge.

The central research problem is to respond to the recommendations of Murphy (2011) and calls for more focus on collaborative research within the wider construction management field, as well as to address the gap in the literature mentioned by Flemming (2011) on the lack of understanding of strategy on the part of Irish architectural firms. It also addresses the findings of Tansey et al. (2017) on the need to develop a “taller” ontological approach to the study of strategy in construction firms.

The need for exploring strategy in construction PSFs is even more pronounced, due to the nature of the Irish services sector more generally, which accounted for 75% of employment in Ireland in 2017 (CSO, 2019a). Besides, PSFs are also different from manufacturing or contracting firms in construction in the following areas:

- high knowledge intensity (Teece, 2007);
- employ a professionalised workforce (Von Nordenflycht, 2010);
- hold high employee bargaining power and preferences for autonomy (Anand et al., 2007; Lowendahl, 2000);
- rely on the experience of staff in the organisation (Maister, 1993)

- high level of theoretical knowledge of an academic type (Abbott, 1988).

These unique differences, coupled with the lack of understanding about how these firms engage in strategising in construction, form the basis of this inquiry. Understanding the interplay between the characteristics of the strategy process and similarities/disparities across all three primary professions are central to this study.

1.4 Research Questions, Aims and Objectives

Every research investigation needs to begin with a well-defined research question and aims in order to be able to benchmark whether the objectives have been achieved at the end of the study or not. This research investigation addressed the following question:

What are the strategic decision-making processes deployed in high knowledge-intensive professional service firms within the construction sector in Ireland?

In order to answer the research question outlined above and to bridge the perceptible gap in the current body of knowledge, the aim of the research is:

To determine the strategy process/practices within Irish construction professional service firms (CPSF's) and to explore the extent of convergence/divergence across professions resulting in the development of a framework for strategic decision-making.

To achieve the stated aim, a number of objectives have been identified as follows:

1. to ascertain the characteristics of the strategy processes in Architectural, Engineering and Surveying (AES) firms in Ireland.
2. to identify the extent of convergence or divergence in the strategy process across

AES firms in Ireland.

3. to conduct a cross-professional analysis of strategy processes in the three professions, identifying similarities and dissimilarities between them.
4. to apply the emerging strategy-as-practice approach to CPSFs [exploring the practitioners, practice and praxis strands of strategy within these firms].
5. to develop a framework for construction practitioners to adopt in the strategy formulation process, specific to construction PSFs.

This study moves beyond isolationist research by exploring strategy across disciplines and using multiple views of strategy in exploring decision-making within the Irish construction industry. The adoption of SAP lenses in viewing strategy within construction PSFs has never been done before, forming a novel contribution to knowledge within strategy studies in construction.

The key issues that are addressed in relation to the practice of strategy (see objective 4) based on the recommendations of Jarzabkowski & Spee (2009) are:

- Who does it?
- What do they do?
- How they do it?
- What tools do they use in the doing of strategy?
- Implications of their decisions for shaping strategy (resulting SAP framework).

Overall, this study investigates for the first time, the complexities inherent in the strategy process within CPSFs, compare these across AES firms, and propose a process map,

which would allow managers to generate a profile for the strategy process in their firms.

1.5 Scope of the Study

This research explores the critical characteristics of the strategic decision making processes and the strategic choices across construction PSF's in Ireland. It is not uncommon to find studies linking strategic decision-making to performance, particularly in construction (e.g. Robinson et al., 2005; Oyewobi, 2014). However, recent calls have emphasised the need for strategy research in construction to move beyond performance-focused metrics and empirical isolationism (Tansey et al., 2017), to more practice and people oriented studies, especially in light of less predictable business environments. While this study acknowledges the need to measure performance-related issues in strategic decision-making, it lies beyond the scope of the research.

The study focuses on AES firms in Ireland, which comprise a significant portion of the PSF market share in the Irish construction market (CSO, 2019b). The unit of analysis of this study is, therefore, AES firms in construction in Ireland. The study encompasses the complex and multi-faceted issues regarding the internal and external environment within which these firms operate, strategic choices selected by strategists (decision-makers), formality of approach of the strategist to decision-making, risk attitude and knowledge acquisition.

Drawing on data gathered via a cross-sectional study of CPSFs in Ireland, the strategy processes employed in these firms are explored, using micro and macro levels of analysis. Each profession is analysed in detail prior to a comparative analysis being undertaken. The study does not include contracting firms, as they are beyond the scope of the research and have previously been the focus of several researchers in strategy in construction. In

addition, while technology is a fundamental driving force in strategic decision-making in construction, it also lies beyond the scope of this exploratory study as there is a need to understand how firms make decisions prior to determining the role of technology.

The next section outlines the dissertation model adopted for the study.

1.6 The PROD²UCT Dissertation Model

An outcome-oriented dissertation model called “PROD²UCT” proposed by Holt & Goulding (2017) recommended for use within construction management research. The model is designed based on seven key, chronological thesis stages which are: *pick, recognise; organise; document and draft; undertake; consolidate; and tell*. The model process involves picking the research focus, recognising the elements of the study, organising the investigation, documenting and drafting an outline/research process, undertaking the study, consolidating findings and then reporting same. The PROD²UCT model is presented in figure 1.

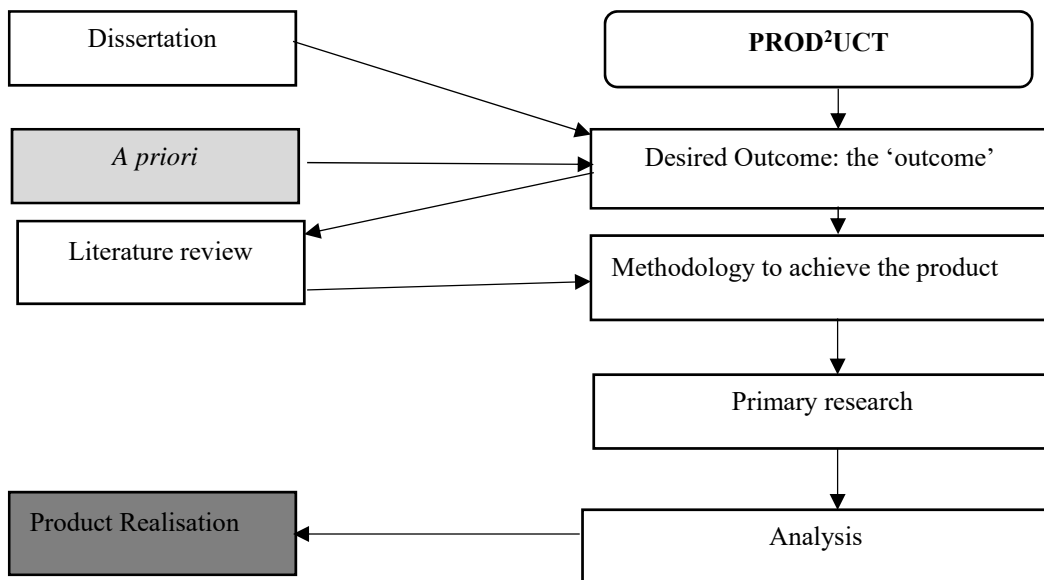


Figure 1 Prod2UCT Dissertation Model (Holt & Goulding, 2017)

The proponents of the model outline the following benefits inherent in the adoption of the model, ergo:

1. It creates an initial “stimulus” for emphasising key study stages, encouraging researchers to embark on their dissertation journey effectively.
2. It is an aide-mémoire of the research stages, serving as guidelines to the research and promoting an effective review of the literature, aiding students to know what to look for and what questions need to be answered.

The PROD²UCT model is outcome-oriented, allowing the researcher to consider what the “product” of the dissertation will be from the outset, particularly using this as the basis of all following aspects of study design and implementation (McMillan and Weyers, 2014)

Other cited benefits of using the model above is that it allows the researcher easily to set the aim and make right methodology decisions, enabling data capture to secure the desired outcome (Holt and Goulding, 2017). Thus, this research adopted this “outcome-oriented” model ahead of the feed-forward paradigms, clearly defining the expected end product, and ensuring that the study design maximises the potential to achieve it.

1.7 Research Methodology

This study adopts a multi-method, adductive approach to data collection, analysis and interpretation. As there is no standard methodology that can be applied to all research problems, the choice of the methodology and philosophical approaches to the study was based on the research questions posed, type of data available and the nature and scope of the investigation (Bell, 2005). The data collection and analysis was conducted in two phases, comprising quantitative and qualitative strands i.e. mixed methods, in line with the selected pragmatic philosophical stance, which allows the researcher to view the topic

from both constructivist or objectivist point-of-view (Saunders et al., 2009). The mixed methods study is based on abduction, which is a form of analytical thinking that combines inductive and deductive research strategies (Alvesson & Sköldbberg, 2009). The data collection instrument adopted is survey questionnaires and interviews, which presents a highly economical and accurate way of collecting large amounts of data to address the research questions/objectives (Saunders et al., 2009).

The design of the questionnaire and interview protocols was based on already established strategy metrics highlighted in the literature review, and the survey instruments were duly pilot tested. The sample size comprised 510 architectural firms, 99 consulting engineering firms and 236 quantity-surveying firms with corresponding response rates of 27.69%, 43.43% and 22.75% respectively, while the qualitative phase entailed 27 interview responses. The data in the qualitative phase was coded using QSR NVivo 12, and based on a detailed seven-step coding process outlined by Miles & Huberman (1994). The categories used for the data analysis emerged from the research question, body of knowledge, previous studies in the area, empirical data, and the interplay among these key elements (Anderson-Gough et al., 2005; Jørgensen and Messner, 2010). The analysis moved back and forth between the empirical data, theoretical knowledge base and previous research on strategic decision-making, creating new knowledge in the process.

1.8 Thesis Outline

This section gives an overview of the entire thesis document, which is structured in 10 chapters as illustrated in Figure 2.

Chapter 1: This chapter describes the entire dissertation, providing an overview of the research background, context, central research questions, aims and objectives. The

chapter also outlines the scope of the work and in addition to the research aim and objectives, with the justification and limitations of the research clearly outlined.

Chapter 2: In this chapter, a critical review of the literature on the construction sector in Ireland is presented, putting the research into a geographical context. The chapter also explores existing research on the nature of the Irish construction industry, its contribution to the economy and employment, and discusses the key factors driving construction activity in the sector.

Chapter 3: Strategy as a management discipline is introduced in this chapter, with chronological and theoretical underpinnings analysed. The chapter also conducted a systematic literature review on strategic decision-making, the primary views in strategic management and characteristics of the process/practice paradigms. This chapter positions the study within the broader field of strategy research and links it to the less explored area of the management of professional service firms.

Chapter 4: In this chapter, a deeper analysis of the strategic decision making processes in construction professional service firms is conducted. Starting with the state of knowledge regarding professional service firms in general, and subsequently in construction, further analysis of key aspects of the strategy process in PSFs are explored. The knowledge-centrism of PSFs, and their propensity to the influence of social contagion during knowledge acquisition is also discussed, linking them to professional bodies and associations (particularly in AES professions).

Chapter 5: A synopsis of the literature and summary of gaps identified in the body of knowledge, justifying the need for the research and linking the body of knowledge (literature) to the analysis.

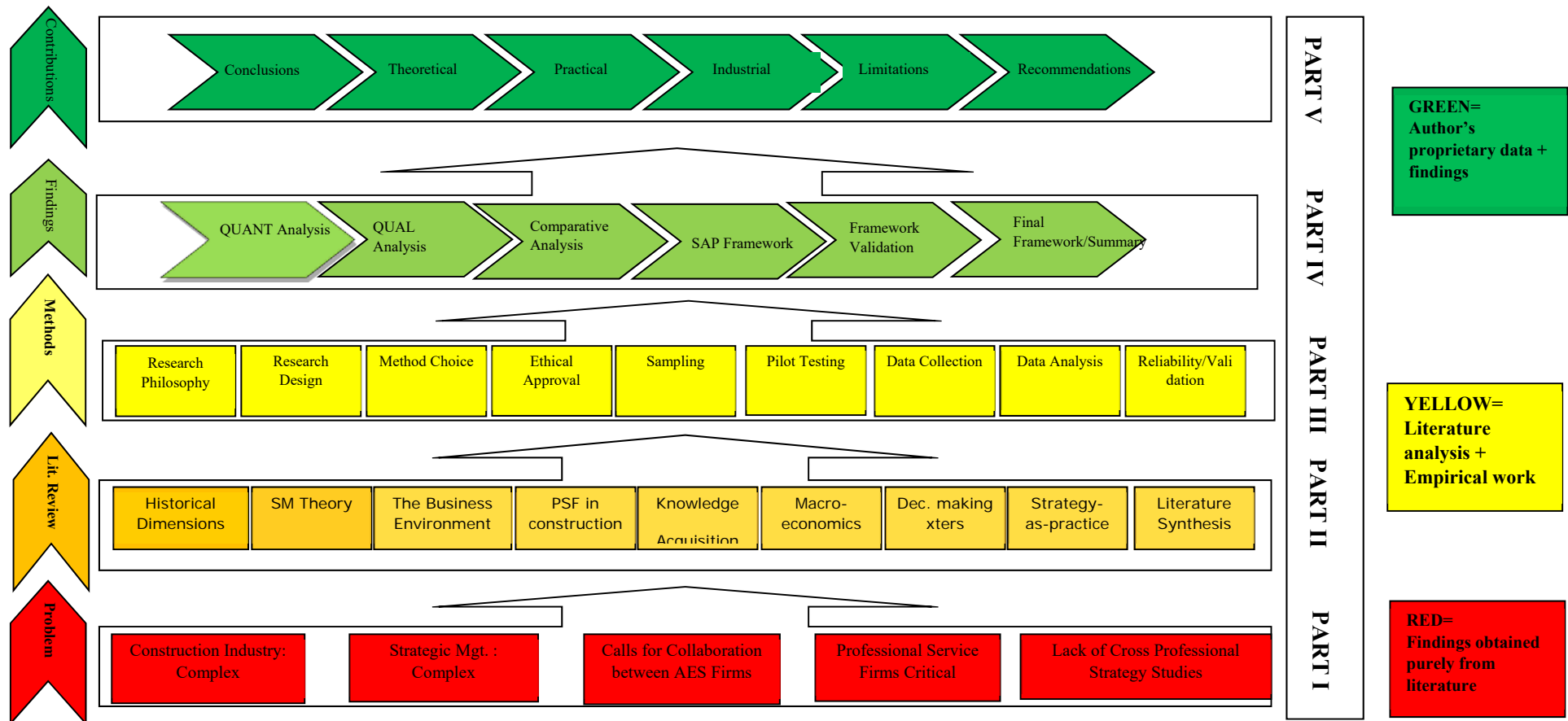


Figure 2 Thesis Outline

Chapter 6: A comprehensive discussion of the research methodology was included in this chapter, detailing the methods employed for data collection, analysis and interpretation in the study. Also, the overall research paradigm applied in this study, philosophical views and approach (mixed methods) adopted are detailed and justified. The sampling strategy, criteria for inclusion and exclusion, data protection/data quality process and ethical considerations was also explained for both the quantitative and qualitative stages of the study.

Chapter 7: In chapter seven, the data collected in the quantitative stage of the study is analysed and discussed. The results of statistical analyses are reported and interpreted, with a discussion of the pattern of relationships that exists amongst the research variables and conclusions drawn via comparison across the three professions. A multi-level analysis is also conducted to see if size, firm age and ownership structure has any effect on the strategic decision-making process across the professions.

Chapter 8: Chapter eight presents the data from the qualitative stage (stage II) of the study. The chapter discusses the results of the semi-structured interviews in the context of the literature review, and the data collected in stage I (quantitative). The findings in this chapter were compared against that obtained in the quantitative stage, and where discrepancies occurred, possible explanations were presented. The data and findings in this stage serve as a validation tool for the findings obtained in chapter 7, forming another QA layer.

Chapter 9: This chapter provides a summary the research and presents the key contributions of the work. Linking back to the research aims and objectives, this chapter draws a parallel between what the study set out to achieve and what it accomplished. The chapter also presented a strategy-as-practice framework, which serves as a guide for firms

looking to design strategy from the findings of both QUAN/QUAL analysis.

Chapter 10: This chapter presents the overall conclusions to be drawn from the research findings, and the extent to which the study achieved its aims and objectives and deals with the limitations of the research, and suggests areas for further studies.

1.9 Models Vs Frameworks

Several researchers in construction have undertaken different approaches to understand strategy via developing models (e.g. Yang & Yeh, 2009; Oyewobi, 2014) and empirical studies (Murphy, 2013; Tansey, Spillane & Meng, 2014), yet not much inquisition has explored strategic decision-making from the strategy-as-practice dimension i.e. the practitioners, practices and praxis elements. Although several empirical studies has been carried out by leading strategy authors in construction such as Hillebrandt et al. (1995), Chinowsky & Meredith (2000), Cheah et al. (2007) and Tan et al (2012) among others, and several of these studies have their final output as mathematical models. Other key examples within construction are Pamulu (2010) and Oyewobi (2014), whose mathematical models for strategy are well cited in the literature, but lacks adoption in practice. Particularly within professional service firms in construction, there has been a dearth of *practice-centric models* that are applicable to micro contexts of decision-making processes within these firms, specifically within Ireland.

In professional service firms, people (professionals) are central to strategising, as their competitiveness goes beyond the traditional institutional focus to client-focused, personalised service offerings (Faulconbridge and Muzio, 2009; Capasso & Dagnino, 2014). Hence, the professionals working within these firms are critical to its strategy, making the subject of resource allocation and leveraging dynamic capabilities effectively

a central issue. Previous models within strategy research in construction have not addressed these people-focused processes, neither have they clarified how they influence decision-making within these firms. In addition, due to the knowledge-intensive nature of PSFs, where management is counting on employees with different types of expertise working together to achieve a common goal (Hoppe, B. et al., 2010), mathematical models will not suffice in dealing with the unique organisational aspects of the firms. These includes work processes, structures, practices and culture, which are not only difficult to capture within mathematical models, but problematic for actors within these organisations to communicate and implement.

Earlier management models used within construction, which are highly project-based have faced difficulties in effectively integrating unique attributes within firms, and have been criticised to have reached their limit of application, with some exhibiting diminishing results (Winter et al., 2006; Chinowsky et al. 2008). Due to these issues, there has been calls for tools of analysis and frameworks that capture the social dimensions and relationships (Pryke, 2012). These relationships that exist within firms although dynamic and transient, particularly within turbulent environments are worthy of investigation and cannot be captured within mathematical models focused at regression and multivariate analysis, but using an analytical framework for mapping the process.

Another justification for the proposition for strategy-as-practice perspective to strategic decision-making, and particularly proposing a framework for adoption, is due in part, to the dissatisfactions in academics within strategy research, who decried the focus of studies on macro-elements of strategy, rather than its microelements (Johnson et al., 2003; Varyani & Khammar, 2010). There has now been increasing inquiries into strategic decision-making on a micro-level, focused at exploring ways in which managers (either

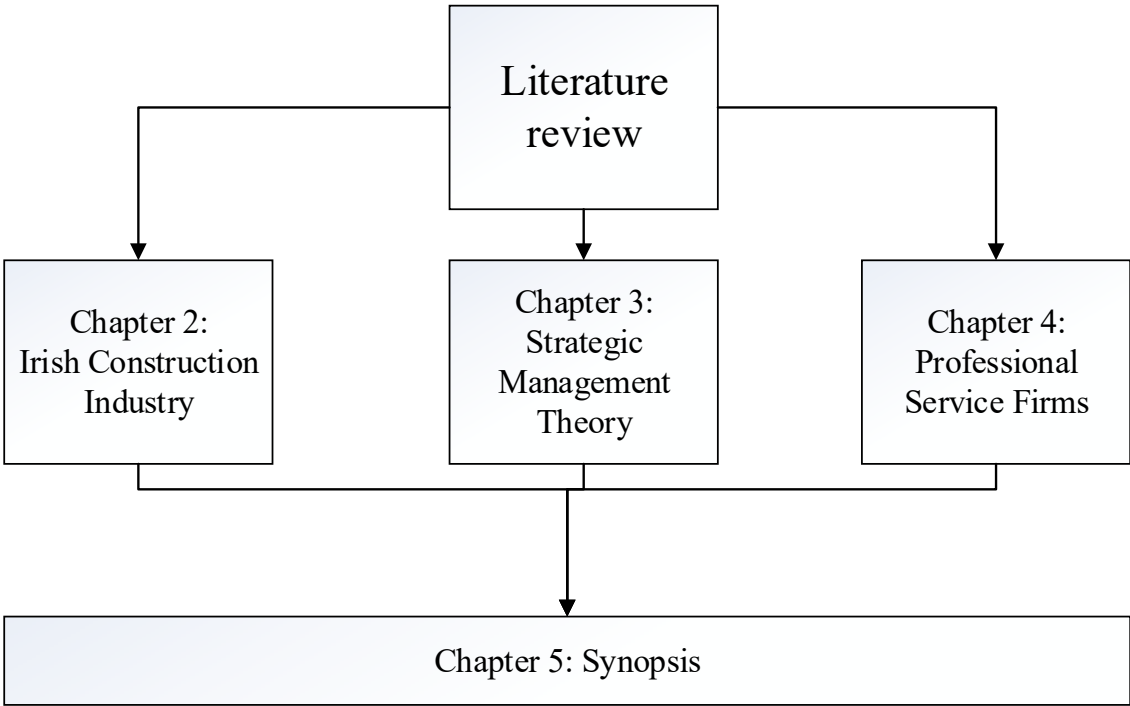
top-level or mid-level, consultants or professionals) mobilize people, tools or processes when engaging in strategic activity (Rouleau, 2013). This type of processes need to be captured in an intuitive, analytical and unambiguous process, that can be understood at every level of organisation, this justifying the proposal of a framework instead of a model. Thus, in support of the research objectives, it was also necessary to propose a framework for strategic decision-making within construction PSFs, targeted at describing and/or quantifying the relationships between the practitioners, practices and praxis elements of strategy, and linking them to expected organisational outcomes.

The framework proposed in this thesis does not focus on causality or correlation (Pryke, 2004a; 2012), but presents an alternative to the popular mathematical/statistical frameworks as presented in the works of popular strategy researchers in construction (Akintoye et al., 2000; Anikeeff & Sriram, 2008; Lu, 2010; Pamulu, 2010; Loosemore, 2016). As Rouleau (2013) outlined that SAP methods do not deal with correlation or causality, but seeks to identify or “make sense” of the practice of strategy, hence the framework helps deconstruct the strategic decision-making process rather than seeking to draw statistical abstractions or relationships.

1.10 Summary

This chapter presented an overview of the research, exploring central issues relating to the study such as the background, justification and research aims/objectives. The chapter presented the foundational basis on which the study rests, especially the unit of analysis of this study i.e. architectural, engineering and surveying firms, and the rationale behind the adoption of a framework as the central output of the study. The thesis outline, showing a chapter-by-chapter breakdown of the thesis document is also presented, and an argument for a framework instead of a mathematical model offered.

PART II: LITERATURE REVIEW AND IDENTIFICATION OF GAPS (CHAPTERS 2-5)



2. THE IRISH CONSTRUCTION INDUSTRY

2.1 Introduction

This chapter positions the overall study within three areas. First, it positions the study within an industry, as studies into management practices are usually focused at particular industries, e.g. manufacturing, finance, legal, automotive, and so on. The chapter provides a critical analysis of the construction industry and its unique characteristics. Secondly, this chapter explores the Irish economy and the role that the construction sector plays in the macroeconomics of Ireland. Thirdly, this chapter provides a stakeholder analysis for the construction sector, outlining the role of professional bodies and service firms who service a critical role within the sector.

This chapter also rigorously analyses why the Irish construction market is important to the overall economy and why the industry needs to be studied. Having this background fully established provides a basis for further empirical analysis into competition within the sector, and paves the way for understanding how firms within the sector conduct their business. The nature of the construction industry in Ireland and its linkages to professional bodies are also discussed prior to a scrutiny of strategic management theory in the subsequent chapter.

2.2 Analysing the Business Environment

The process of analysing the business environment is a complex task as it involves reviewing a wide range of factors and forces, to enable fluid analysis and to be able to draw insights relative to the study under consideration. Kalkan & Bozkurt (2013) highlight that understanding the business environment helps managers increase awareness of the opportunities and threats in the place where they conduct their business,

and therefore helps reduce the risk involved in making certain decisions. Macmillan & Tampoe (2000) also posit that the intention of analysing the external environment is to understand factors that may affect the future of the entire business from the outside. When conducting external analysis (i.e. analysis of the business environment), it is important to consider factors that may influence the firm's business (either negatively or positively). Hence, a clear understanding of the external environment is critical for business managers. Huemer & Östergren (2000) also adds that for a firm to be able to implement change over time, it must not only understand its business environment, but also be able to interpret it adequately. Thus, an investigation into the dynamics of the Irish construction business environment is warranted, to give insights into its nature, structure and contributions to the overall economy. The business environment analysis framework by Hunger and Wheelan (2003) is adopted for the analysis and outlined in Figure 3.

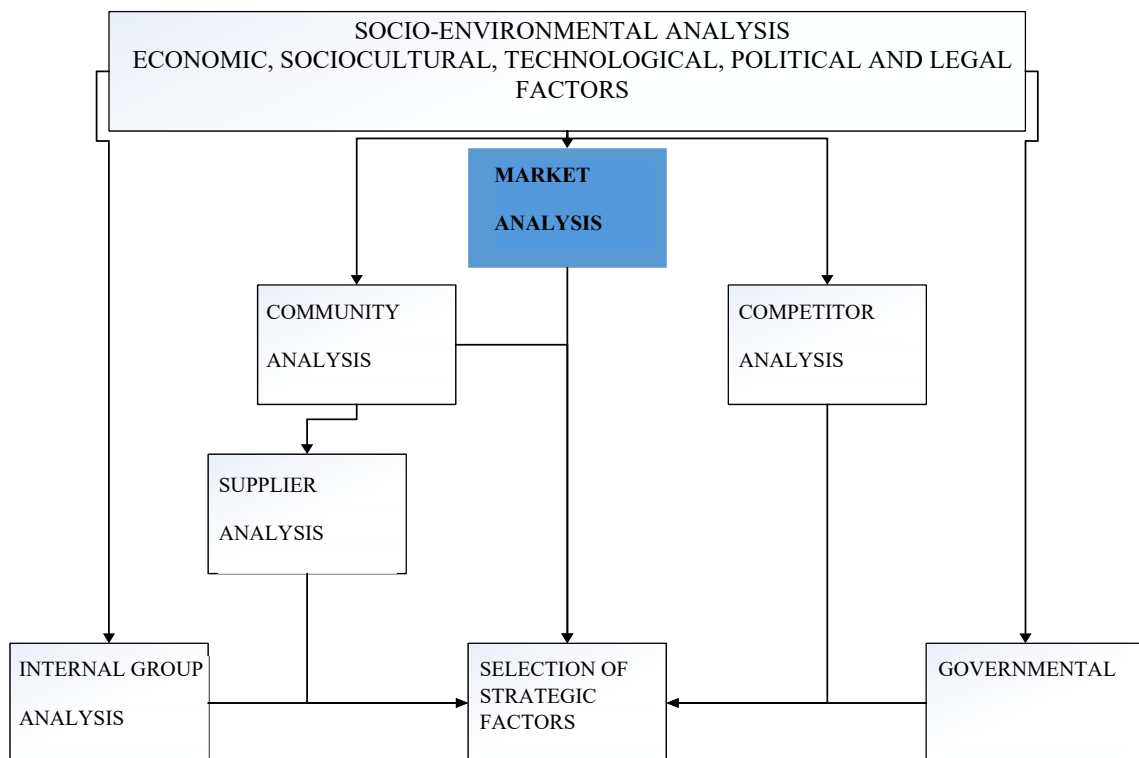


Figure 3 Exploring the external environment (Hunger & Wheelan, 2003, p.34)

The Irish construction industry is the sole sector under consideration, with the focus in this section being on the market/economic analysis as highlighted in Figure 3. In the figure, topics such as community analysis are explored, but using different themes as unique to PSFs (for example, community analysis is explored as communities of practice) In addition, the term ‘market’ is used broadly in relation to the Irish construction industry. Stakeholders including surveyors, architects, contractors, engineers as well as clients and government agencies are often required to collaborate on projects and this in itself poses deep complexity, exacerbated by high levels of investment, the multi-faceted nature of the construction teams, the unique nature of its products, and the effect the industry has on associated industries (Ashworth and Hogg, 2014; Hillebrandt and Cannon, 1994). These interdependencies make it much more difficult for research inquiries to be conducted in construction, particular studies involving multiple disciplines.

2.3 Construction Sector in the Global Context

The construction industry is a critical component of the world economy, particularly in terms of employment and contribution to national output (McKinsey Global Institute, 2017). The industry is highly fragmented and blighted by issues of delivery and governance (Davidson, 1994). Due to the unique and complex nature of construction projects, it is very difficult to make international comparisons within the construction sector due to the social complexities and systems affecting the sector (Langdon, 2003). The global construction sector has also been criticised of underperforming, despite holding the potential to achieve more in terms of profitability, cohesion and human resources (Hore & Thomas, 2011).

Global markets witnessed a significant shift with the financial crash in 2007, and the construction sector was one of the most affected. However, the industry has recovered

across the world, mostly driven by the focus on urban areas and cities. Within the European context, the United Kingdom and Ireland are key economies driving change and contributing to the overall output of the sector (McKinsey Global Institute, 2015). Despite the return to growth across the world, several criticisms regarding short-term thinking, fractious cross-disciplinary relationships and slowness to change have been levelled against the sector (McManus & Murphy, 2016). The complex and fragmented nature of the sector, coupled with the propensity for short-term thinking has led to calls for fostering collaboration and improved dialogue between stakeholders in the industry (Latham, 1994; Farmer, 2016).

Growth within construction in Europe is driven mainly by consumption and investment, while the global construction sector is buoyed by increasing globalisation, technological and business needs, value- and cost-based metrics, and workers' mobility (Corporate Real Estate 2020 Final Executive Summary, 2013). The McKinsey Global Institute report highlighted the UK and Irish markets as the key driving economies within the EU, therefore justifying the focus of this study on the Irish construction industry. Referring back to Langdon (2003) argument that construction needed to be considered within a national context, the Irish national construction industry is now reviewed in the next section to gain insights into the sector, factors shaping it and stakeholders present therein.

2.4 The Construction Industry and the Irish Economy

The construction industry is an important player in every world economy and its impact have been recorded widely, specifically in terms of Gross Domestic Product (GDP) contribution to employment creation. This section will explore the contributions of the construction sector to the economy, employment creation, and other aspects of the society.

2.4.1 Contributions to The Economy

The construction industry receives criticism for low productivity (Vrijhoef and Koskela, 2000); project-centrism (Jonsson & Rudberg, 2014); slow to adopt innovation (Housing Forum, 2001) and difficulty in leveraging knowledge for strategic advantage (Löwstedt et al., 2011). Furthermore, the industry has been accused of showing a lack of integration of human resource and knowledge management at the strategic level (Björnström, 2007). The Farmer report (2016) emphasised that the construction industry needed to “modernise or die”, highlighting the many issues that confront the sector, particularly as it relates to collaboration and sustained competitiveness. There is however, very little inquisition within the Irish context into the competitive choices adopted by firms in the industry, despite repeated calls for the sector to adapt in response to challenges such as skills shortages (Murphy, 2016) and innovation (AECOM, 2019).

Given the critical importance of construction to the economy in Ireland, examining the industry in detail and exploring issues relative to its influence is required. Between 2008 and 2018, the economy witnessed tremendous change, posting remarkable growth until its peak in 2008, and subsequent downturn, due to the recession that ensued starting the same year. The recession in 2008 was linked to the global financial crisis, which resulted in the collapse of housing markets all around the world, with a corresponding effect on the Irish construction industry (Murphy, 2016).

Figure 4 shows the value of the Irish construction industry over a 10-year period, showing the period of deep recession post-2008, recovery and return to steady growth. One of the primary drivers of growth in the Irish economy is its propensity to actively attract high levels of Foreign Direct Investment (FDI), with the recent return to growth of the sector having been led by FDI-led projects and growth in the residential building sector (CSO,

2019b). Also, the low corporation tax regime has attracted many multinational companies that contributed to the growth of the country's GDP and competitiveness within the EU and beyond (O'Connor, 2016).

Value of construction output 2008-2019

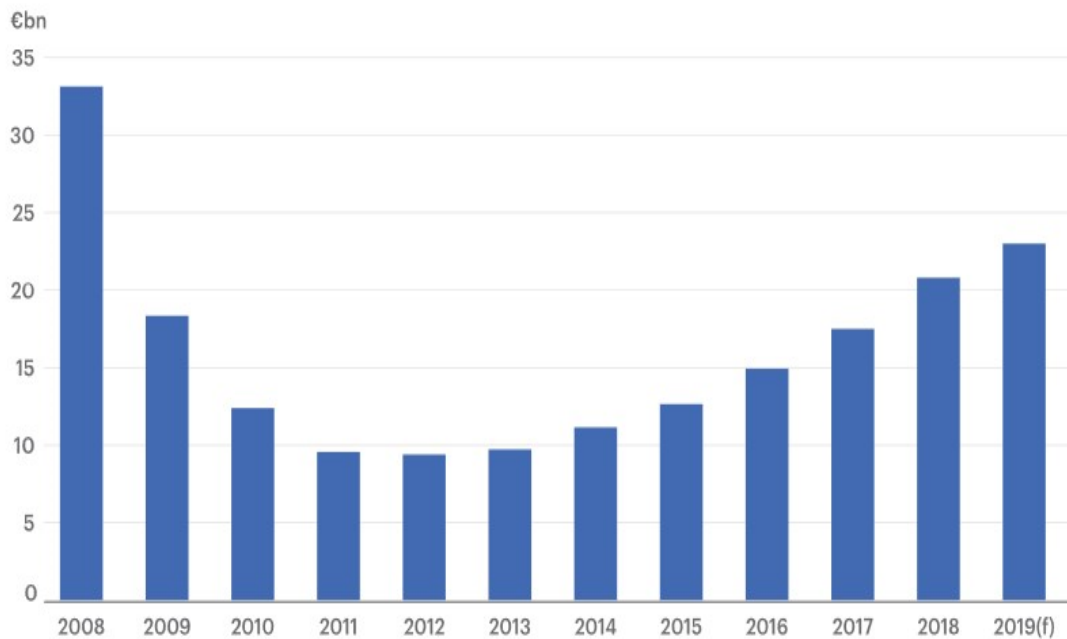


Figure 4 Value of Construction output between 2008-2018 (Source: Linesight, 2019)

With the continued growth in the sector and forecasted growth of 8.6% contribution to GDP in 2019 (CSO, 2019), the construction sector is poised for continued growth, presenting an opportunity for understanding how stakeholders within the industry design their business for survival through future economic cycles.

2.4.2 The Construction Industry and Employment

A vibrant and efficient construction sector is an essential part of any economy, and this is particularly true in the case of Ireland. The construction sector provides the critical infrastructure needed for living and livelihoods within the country, and it is also a

significant driver of economic competitiveness and capability. Every economy thrives where there is medium to long-term goals in construction and as the population grows, there will be increasing requirements for residential housing, office space, and infrastructure leading to the creation of jobs. Figure 5 outlines the employment data in the Irish construction industry over the last twenty years, outlining the cyclical pattern in the sector and its impact on employment.

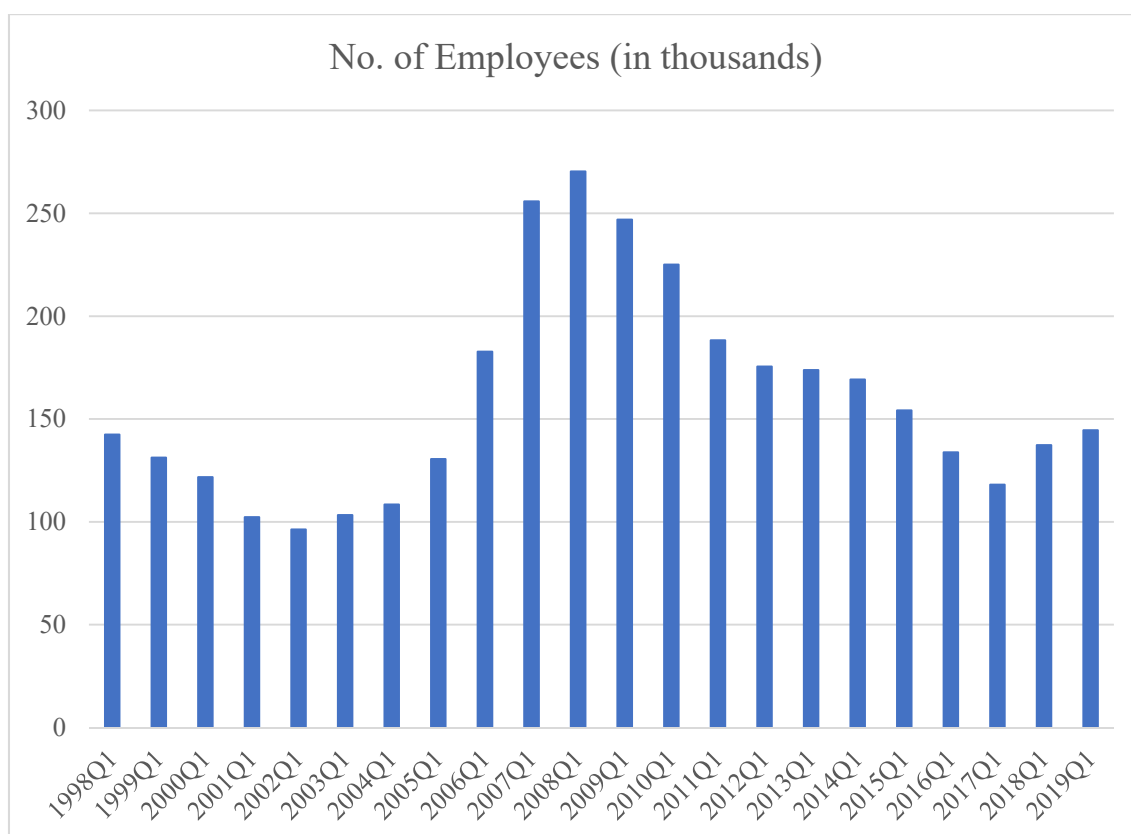


Figure 5 Person aged 15 years and over in Employment (Source: CSO, 2019)

Figure 5 shows that in 2008, there were about 240, 000 persons employed in construction (both direct and indirect employment), which declined to 80, 000 in 2013. The employment statistics have returned to over 144, 000 persons showing improvement in the sector and return to growth-driven by economic growth, foreign direct investment and increasing government and private sector investment. Recent data published from

the CSO Labour Force Survey puts direct employment in construction at 144,600 as at Q1 2019, posting an increase of 23,500 in just two years (CSO, 2019c).

The construction sector in Ireland has continued to grow across all sectors, with the central statistics office indices published in Q3 2018 showing a 19.9% year-on-year increase in the volume of total building and construction output (CSO, 2019b). New commercial office buildings in the Greater Dublin Area (Linesight, 2019) have led the recovery, buoyed by private sector investments and local economic growth. The next indicator of growth in the construction sector is the National Development Plan 2018–2027. This plan was published in a bid to drive Ireland’s long-term economic, environmental and social progress across all parts of the country over the next ten years. The plan is expected to bolster government spending and investment in the construction sector totalling almost €116 billion, underpinning and driving the implementation of the National Planning Framework. The government has currently dedicated €91 billion in Exchequer funding for public capital investment, which is expected to be supplemented with substantial investment by commercial State-Owned Enterprises (Project Ireland, 2018). This increased level of resources made available for construction investment is expected to move Ireland close to the top of the international rankings for public investment in construction. Also, increasing consumer confidence and foreign direct investment (FDI) are part of the key factors driving the economic change (National Skills Bulletin/SOLAS, 2018).

Another critical factor in the Irish construction sector is the role that SMEs play in the industry. The Irish central statistics office reports that SMEs accounted for 99.8% of total number of enterprises in 2016 and over 68% of all persons engaged (CSO, 2019d). This is further highlighted in the construction sector as shown in Table 1, that SMEs occupy the largest market share in terms of people engaged in construction in Ireland.

Table 1 Construction Enterprises (Number) by Persons Engaged and Year

No. of Employees	2008	2009	2010	2011	2012	2013	2014	2015
0 - 9	59,076	55,722	51,380	49,202	48,618	47,503	46,180	49,192
10 - 49	2,544	1,587	1,128	975	847	924	1,064	1,240
50 - 249	259	147	88	70	56	66	89	101
250 and over	26	16	11	9	9	9	16	13

Van Nederveen and Tolman (2001) highlighted that the construction industry is almost unique in its dependence on SMEs for successful communication between the disciplines. The data in table 1 supports this position, as more than 99% of firms registered within the construction industry as of 2015 were SMEs. Seriki & Murphy (2019) criticised the preoccupation of construction management researchers with large firms, particularly within the Irish context, where SMEs constitute the largest market share in terms of numbers employed.

This study addresses this limitation and by not focusing merely on large firms, but explores both SMEs and large firms within the industry. Having established the importance of the Irish construction industry in terms of its contribution to economic output and employment creation, an inquiry into this multifaceted and multidisciplinary sector is thus justified. By taking a long view of the sector, the study has been well-positioned for further investigation into how businesses compete therein despite its cyclicity and diverse stakeholders.

2.4.3 The Nature of The Irish Construction Industry

An analysis of the Irish construction business environment and forces that shape competition within the sector is undertaken in this section. The goal of undertaking a review of the business environment is to understand the opportunities available to firms in the construction sector and the threats confronting them. This is done in a bid to adapt

the information to understanding strategies that can enable them to outperform their rivals. The Irish construction industry has multiple sub-divisions, presented in Figure 6.

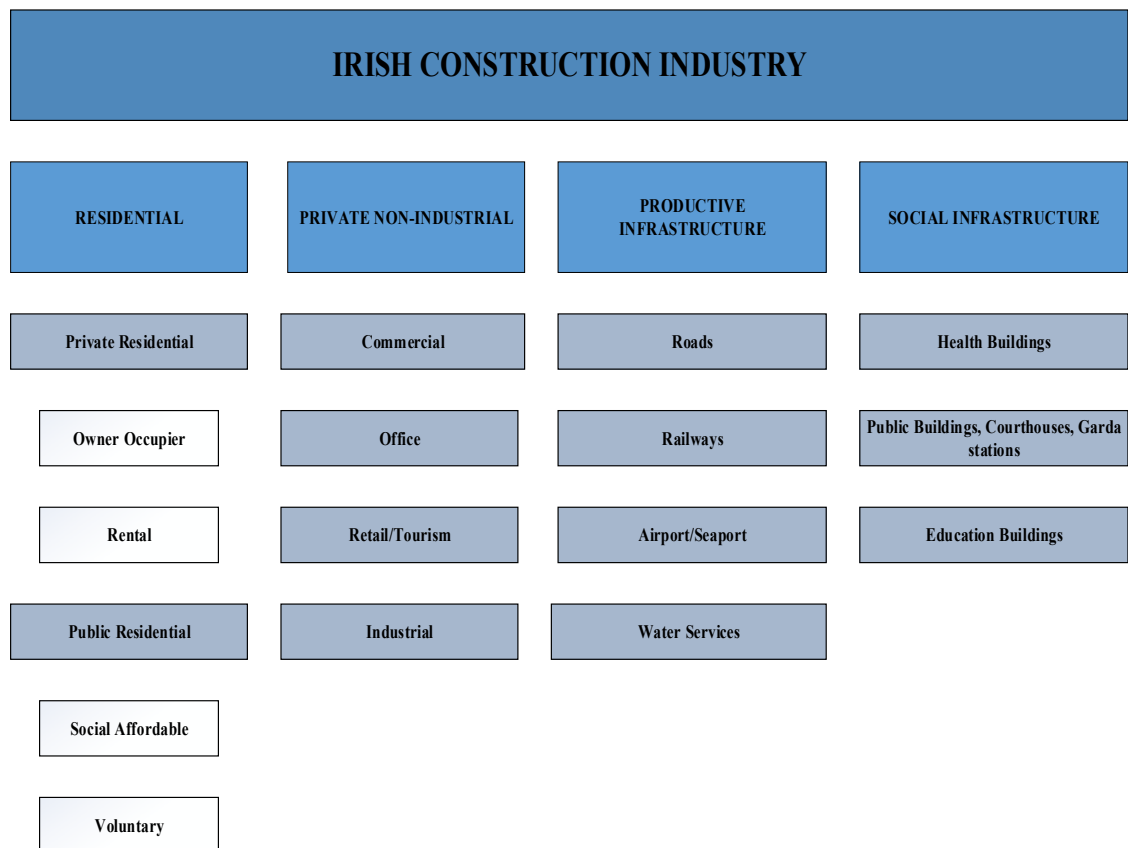


Figure 6 Irish construction industry (Murphy, 2016)

Similar to what is recorded across the world, the construction industry in Ireland is fragmented and occupationally diverse, with majority of employees employed in construction trades (c. 60%), while the remainder work within professional services and other activities (Forfas, 2015). The chart in Figure 6 further highlights the multidisciplinary and multifaceted nature of the construction industry in Ireland, with Architecture, Engineering and Surveying (AES) firms falling under the technical consultancies. These firms are required to work together on projects, but have not been studied largely, despite making up about a third of the Irish construction workforce. These consultants are often lumped together in terms of productivity and operational analysis,

yet studied in silos on a strategic level. AES firms are sometimes referred to as AEC firms, with the term used interchangeably in construction management literature (cf. Graham, 2007; Pamulu, 2010). Other authors (e.g. Jewell et al., 2010) refer to them as AES (architectural, engineering and surveying) firms and they are considered to be one of the most functional clusters of professional service firms that work in the construction sector.

A professional service firm in this study refers to firms included under the Building Control Act 2007 (Irish Statute Book, 2016) and registered as Architectural, Surveying or Engineering firm. The quality of any AES firm is heavily dependent on the quality of its human resources, and the individual firms' expertise is only as good as the talent and motivation of the staff in its employment (Canavan et al., 2013). For this research inquiry, only the term AES is adopted for consistency, as a unit of analysis. This is to facilitate better understanding, consistent with the popular classifications used within construction management research.

The Irish National Skills Bulletin (2018) posits that there has been growth in the demand for construction professionals, with massive shortages witnessed among engineers, construction project managers and quantity surveyors. These skills shortages highlight the fact that these critical professions have been a subject of neglect by both industry practitioners, academic researchers, and even professional associations. The professional associations are often statutory bodies established by law, rendering support and regulatory functions to professionals registered with them. These professional bodies also have other sub-functions and professionals employed in them such as architectural technologists, civil engineering technicians, and land/property surveyors.

A description of the professional bodies regulating AES professions in Ireland is further

outlined below:

The Association of Consulting Engineers of Ireland (ACEI) – This professional association was established in 1938 as a voluntary self-regulatory professional body, representing the business and professional interests of firms and individual professional engineers engaged in consulting engineering.

Society of Chartered Surveyors of Ireland (SCSI) – This body is the independent professional body for Chartered Surveyors working and practising within Ireland. The professional body is affiliated with the Royal Institution of Chartered Surveyors (RICS), the world's leading Chartered professional body for the construction, land and property sectors around the world. The SCSI acts in the public interest and regulates the surveying profession within Ireland. In this study, only professional quantity surveying (PQS) firms are considered and not those who work for contractors, as these are considered *contractor QS firms*.

The Royal Institute of the Architects of Ireland (RIAI) – This is the regulatory and support body for Architects in Ireland. The professional body was founded in 1839, and it promotes the work of architects and architectural technologists within the country. The body is also responsible for improving the quality of work done by architectural professionals, and this is done via advocacy, collegiality, and professional education. Although the body registers both architects and architectural technologists, this study only focuses on professional architectural firms and those registered within them, as they are those who can be classified into the PSF category.

Member firms, rather than individual chartered members of the three professional bodies explained above form the unit of analysis in the study, in response to calls for fostering collaboration and improved dialogue between project teams amid increasing complexity

in the industry (Farmer, 2016). The three professions (architects, engineers and surveyors) are still required to work together, despite the complex and disparate nature of the construction industry (Graham & Thomas, 2005). This complexity and perceived “messiness” poses challenges for researchers to conduct general and insightful studies into the sector (Cheah & Chew, 2005). However, a significant gap exists regarding the unique characteristics of these firms, especially within the Irish context and this is further discussed later in the synopsis chapter of the document (page 95). Furthermore, rapid changes in the economic situation within Ireland has left previous studies on AES firms in Ireland obsolete and there is a need for recent insights, particularly within a significantly changed business environment.

2.4.4 Analysis of the Business Environment: Porter’s Five Forces Analysis

The business environment within which contractors operate has a number of similarities to professions, in that the sector as a whole faces similar competing forces, in particular those that are external to the firm. One of the key tools for determining the forces that drive the competitive intensity and attractiveness (or lack of it) of an industry is Porter’s five forces model, which is used widely for analysing the forces that shape any industry. The Five Forces model includes the following elements: *the bargaining power of suppliers, the bargaining power of buyers, the threat of substitutes, the threat of new entrants and the extent of competitive rivalry*. Porter (1998) added that clients, suppliers, substitutes, and potential entrants are all “competitors” to firms already active in the industry and may become prominent depending on circumstance (p.6). Several studies in construction have utilised the Porter’s five forces model in their work, with authors such as Pamulu (2010) and Kelly (2013) recognising the importance of these forces in construction strategy studies.

The threat of new entrants: There are not many foreign construction companies working in Ireland, and the cause of this may be due to the highly localised nature of work in the industry. New entrants to the industry can bring new capabilities and expertise, but the Irish construction market is so closely linked to that of the UK, which is also currently underserved, thus making the threat of new entrants low. However, with Brexit, there may be more firms coming back or transferring their headquarters to Ireland in order to stay in the EU.

The current skills shortages in the Irish construction market may potentially pose a threat, with new entrants facing a significant war for talent, which may lead to inflated overhead costs as a result, reducing profitability (Porter, 1998, p.7). Newcombe et al. (1990) outlined that the threat of new entrants within the construction industry is considerable due to low market entry barriers that are common to the industry. The threat of new entrants is significantly reduced for large and specialist construction firms because of selective pre-qualification requirements during the highly competitive tendering process put in place by Irish client companies. Barriers to entry into specialist markets in Ireland are high for SMEs as they may be unable to meet the requirements to tender for large or specialised projects.

The threat of substitutes: Porter (1998) outlined that the presence of substitutes limits the potential returns of an industry by placing a ceiling on the prices that firms in the industry can profitably charge (pp. 23). The threat from substitutes to Irish construction firms is minimal, due to the absence of large firms from other parts of Europe and Asia in the Irish construction market. The Irish construction market is highly localised with very few international contractors working internationally, unlike the US and UK market which has presence of large Asian substitutes.

The bargaining power of buyers: As the Irish economy improves, more construction projects are being released into the market, and now the supply of construction expertise almost equals demand. Porter (1998) argued that buyers are key to the competitiveness of an industry, because they force down prices via bargaining for higher quality or quantity of services, and pitching competitors against each other. The bargaining power of buyers in Ireland is relatively moderate, but the trend seems to be tipping towards client's procuring the services of construction contractors through highly competitive tendering competitions, giving more bargaining power to themselves.

The bargaining power of suppliers: In the Irish construction market, suppliers wield a considerable amount of power. O'Malley & Van Egeraat (2000) highlighted that when suppliers are competitive, they help to sustain the competitive advantage of the industry via their supporting role in the industry. As an example, when prices of timber or aggregates provided by suppliers go up, it will have a ripple effect on the construction sector. Newcombe et al. (1990) posit that the reason for the strength of suppliers in the construction industry is because they are larger than the building firms; thus they can dictate or regulate competition in the market. Suppliers can, therefore, exert considerable bargaining power on the construction sector by either increasing prices or reducing the quality of supplies.

Another key issue influencing the power of suppliers is the requirements by law for them to provide energy and emissions data for their products and services, and this requires them to invest more in this area, driving up their prices. Porter (1979) outlined that suppliers in an industry are considered powerful if it is dominated by a few companies and is more concentrated than the industry it services. In particular, firms who supply unique services or products wield immense power, especially if they have a high

switching cost.

The extent of competitive rivalry: Porter (1998) outlined that within most competitive industries, strategic moves by one firm will have noticeable effects on its competitors and may lead to counter moves by the competition. For construction firms in Ireland, this is the same case as firms scramble to counter perceived rivalry of other firms in a competitive position, with several firms regularly monitoring their competitors. Murphy (2013) in her study of construction QS firms in Ireland, found that the firms she studied undertook limited competitor analysis, neither do they continuously evaluate the extent of competitive rivalry. The reason for this was noted that during the construction sector crisis firms concentrated on their own survival rather than undertaking competitor analysis. Newcombe et al. (1990) outlined the following reasons linked to the degree of rivalry in construction markets;

- Market balance
- Markets in transition or in slow or fast growth phases
- Temporary over-capacity may occur for firms which wins large projects, posing a threat to the remaining firms.
- Product or service not differentiated from competitors.

These issues may present opportunities as well as threats for the individual firm, depending on how streamlined the process is. Porter (1998) maintains that when the five forces have been identified, it becomes easy for firms to position themselves via the identification of their strengths and weaknesses.

The five forces analysis provided in this section is crucial to the study as it is one of the key defining analysis defining the context and business environment in which

construction firms conduct their business.

2.5 Summary

A review of the Irish construction sector was undertaken in this chapter, with a critical look at the contribution of the industry to the economy in financial terms and creation of employment. The chapter also reiterated the contribution of the construction sector to the economy, but despite the plethora of information available about the economic contributions of the sector, there remains a lack of concentration on the strategic decision-making process of the key stakeholder firms (AES firms) within the sector. The chapter further highlighted the multidisciplinary nature of the sector, outlining the professional bodies responsible for regulation and governance of professions in Ireland, situating them within the broader industry matrix. Besides this, the chapter outlined a gap in information about SMEs as previous research has focused predominantly on large firms.

This chapter also highlighted that AES firms are required to communicate and collaborate on projects at different times during the construction process, yet there is minimal research investigation examining the peculiarities of individual professions holistically. Construction by its nature is complex for many reasons, and differs greatly from manufacturing on a number of levels, not least of which is lack of uniformity of final output. The strategic management of construction firms will therefore necessarily differ from that of manufacturing, much more in professional service firms in construction.

This chapter has highlighted the changes being experienced in the construction industry in Ireland, particularly the return to sustained growth. The need for AES practices to think and act strategically has never been more apparent, further reinforcing the need for this study. Chapter 2 provided a comprehensive analysis of the Irish construction sector and

demonstrated the importance of the sector to the economy and creation of employment. The chapter has thus justified the focus of this study on construction, the role that AES firms play therein and the need for studies linking strategy to the decision-making process within these firms.

The following chapter investigates strategic management theory, exploring themes related to competitive advantage, business choice and how firms interact with the external business environment.

3. STRATEGY AND STRATEGIC MANAGEMENT

3.1 Introduction

One of the key events of the 1960s in management research was the emergence of studies into the competitiveness of firms, with some of the foundational studies championed by authors such as Chandler (1962), Ansoff (1965) among others. The inquisition into competitiveness allowed for studying patterns and techniques used by firms to outperform their peers, which was referred to as strategic management. This field of management has enjoyed contributions from various disciplines such as political science, economics, and organisational sociology, and cognitive psychology (Rumelt et al., 1994), and has developed a robust theoretical base across several fields. Strategic management studies have therefore become an important component in the management research domain and plays a key role in studies into the dynamics of business organisations. More recently, there has been an increasing interest in competition dynamics and how firms position themselves within the business environment, particularly in the face of turbulence in world economies and increasing protectionist policies across countries in the developed world.

A considerable amount of literature has been published on strategic management theory and its applications to different industries, and the past fifty years have seen accelerated advances in the field. This chapter conducts a critical analysis of literature spanning different industries to achieve the following:

- To explore definitions and historical dimensions of strategy, tracing its origins and evolution to date.
- To identify the current state of the art, particularly with respect to competitive advantage

and how strategic decisions are taken.

- To identify strategic decision-making characteristics that are adopted in the study.
- To explore strategy within the construction industry context.

Bearing these four key steps in mind, a number of key studies that have explored strategy across different sectors and timelines will now be explored in order to form a theoretical base for this study.

3.2 Defining Strategy

Several authors have proffered different definitions for strategy, and Murphy (2013) pointed out that despite the plethora of literature in strategy research, there is no universally agreed definition of the term “strategy”. Mintzberg (1987, p. 11) also added that ‘...*the field of strategic management cannot afford to rely on a single definition of strategy*’. Despite these concerns, one of the earliest definitions of strategic management, as presented by Hofer & Schendel (1978, p.11), states that:

“...strategic management is a process that deals with the entrepreneurial work of the organisation, with organisational renewal and growth, and more particularly, with developing and utilising strategy, which is to guide the organisation’s operations.” (p.11)

The definition by Hofer & Schendel (1978) is not all encompassing, as there is no universally agreed definition of strategic management. However, the definition offered one of the earliest theoretical reference points for defining the concept, and then leads to one asking about ‘*what exactly constitutes strategy*’. A detailed review of the evolution of strategy as a topical issue is outlined in Table 2 outlining key authors identified via a systematic review of strategy literature from its early beginnings to date. The table

explores different time periods in the study of strategy, highlighting how research into the field has moved from explaining strategy in terms of its application in warfare to its current strategy-as-practice focus. The theory has shifted from cumbersome process-centric approach to a more people-centric, decision-making focus, i.e. strategy-as-practice.

Table 2 Evolution of strategy

Author (Year)	Focus/Emphasis
Sun Tzu (320 B.C) in Giles (2013)	Focused on military strategy (Art of War), exploring strategic thinking for winning battles.
Alfred Chandler (1962)	Explored the strategy-structure paradigm. Identifying strategy as the determination of long-term goals and adoption of courses of action for carrying out the same.
Igor Ansoff (1965)	Investigated strategy within the context of incremental development of historical trends, but argued that it cannot be used when dealing with surprises (unexpected events).
Hofer and Schendel (1978)	Conducted analysis of how firms should compete within a business environment & which business they should engage in.
Porter (1980)	This study explores strategy from an industrial economics viewpoint, placing emphasis on industry analysis and the positioning of the firm within the industry.
Mintzberg (1987)	Described strategy as a craft, using a striking image of the strategist making strategy as a potter crafts clay.
Rumelt (1991)	Explained strategy as a reflection of the direction of an organisation in competing for customers, resources and revenue.
De Wit and Meyer, (1998)	Espoused strategy as a process, content and context.
Hoskisson et al. (1999)	Outlined that strategy involves pendulum-like swings, influenced by the firms' external environments and internal resources.
Jarzabkowski (2005), Rouleau (2015)	Introduced the era of strategy-as-practice, which explores strategy as not being about investigating something that a firm has, but what they do.

From Table 2, different views of strategy is presented, showing how the research domain has evolved over the years. Early research into strategy focused on the development (formulation) and utilisation (implementation) phases of strategy (Piercy et al., 2011).

The formulation phase of strategy is usually divided into strategy content (Varadarajan & Jayachandran, 1999; Stonehouse & Pemberton, 2002) or strategy process (Hax & Majluf, 1986; Papke-Shields et al., 2006). The strategy content approach tends to be concerned with the product of the strategy process (Chenhall, 2005). This approach focuses on identifying what is, or what should be, the strategy that will lead to optimal organisational performance. On the other hand, the process approach examines how the content influences the overall strategy (Van de Ven 1992). The interest of strategy process approach is to explore the dynamic relationships between strategic position, resources and eventual outcomes (Chenhall, 2005). The process stream also explores how strategy is formulated, who is involved and how individual differences (-of managers) affect the overall strategy.

The strategy process approach often involves a messy interlinking between strategy formulation and implementation; however, such unintended linkages lie outside the scope of the study. The focus remains on the inherent organisational and behavioural traits/actions within the former i.e. strategy formulation (Huff and Reger, 1987). The actions that are involved in strategic decision-making are a vital issue within the domain of strategic management and are further discussed in section 3.4.

For the purposes of this review, it is important to adopt a definition for strategy among the plethora of definitions by several authors within the body of knowledge. One of the arguments put forward by Junnonen (1998) added that strategy is a complex and multifaceted concept that cannot be condensed into a single definition, however adopting multiple definitions only fosters confusion rather than clarity. For the purpose of introducing a reference point within this study related to the construction sector, one key definition of strategy is adopted. The reason for this is:

- Adopting a definition that considers the complex organisational, technological and psychological areas of strategy (Chaffee, 1985).
- Definition that takes key components in the organisational environment and its effect on strategy into consideration (Kald et al., 2000).
- Recognises that markets are not stable/static (Prahalad and Hamel, 1994)
- Takes key stakeholders into consideration (Wheelen and Hunger, 2011)
- Explores realistic premises and issues faced by the firm (Huovinen, 2006)

Following an extensive literature analysis and consideration of the construction context, Oyewobi's (2014) definition of strategy is adopted in the study, who defined strategy as

'...an organisation's main outline for achieving its long-term objectives or targets, following well-defined guidelines or plans for achieving those objectives in a way that explains the business in which the organisation chooses to operate, how it will respond to changes in market conditions, the reason for its existence, where it intends to be in future and its stated overall direction for growth' (pp. 22)

The reason for the adoption of this definition out of the several definitions in the literature is two-fold:

- The definition is one of the state-of-the-art definitions available within strategy research in construction, encapsulating key strategy themes relative to the industry. This definition fits into the constantly changing nature of the sector.
- The author's work is well accepted within the construction management community (evidenced by the number of peer-reviewed output from the seminal work)

Oyewobi's definition is further dissected in detail in Figure 7 below.

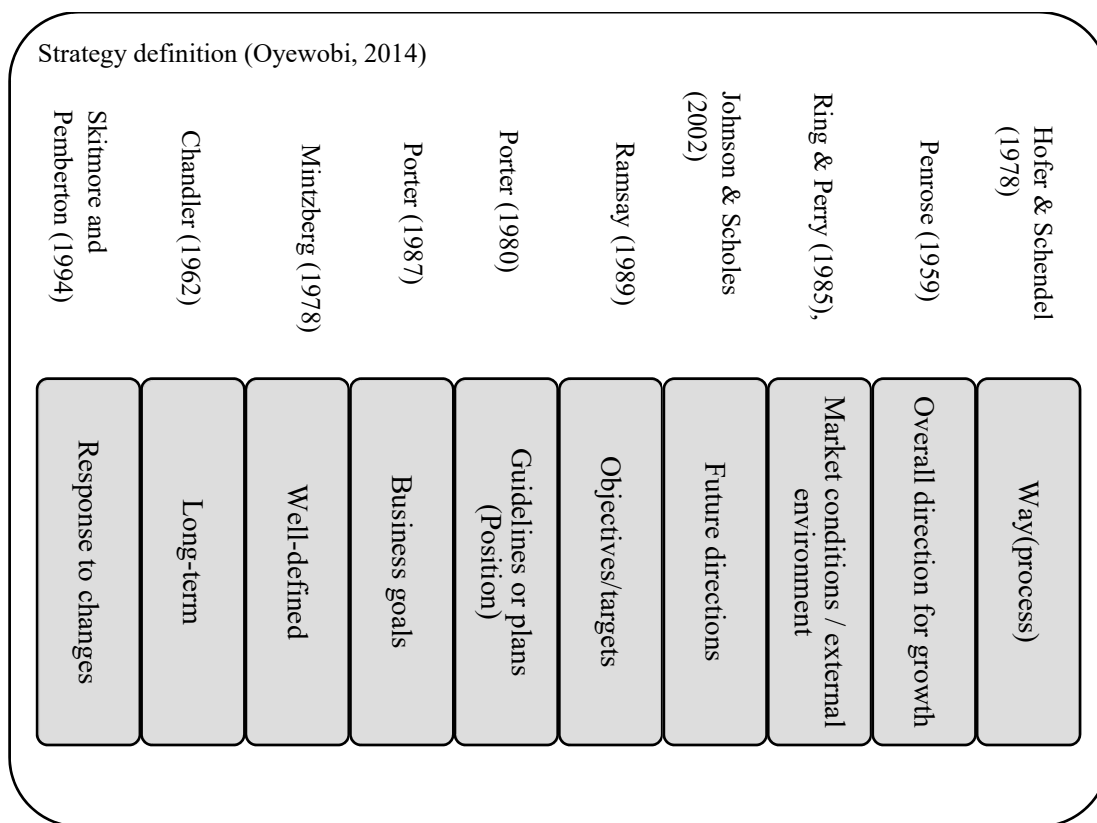


Figure 7 Analysis of the strategy definition by Oyewobi (2014)

Oyewobi's (2014) definition dissected above encapsulates different dimensions and meanings of strategy as espoused by differing seminal authors over the last half a century. The last phrase in his definition "...where it intends to be in future and it's stated overall direction for growth" resonates with Johnson & Scholes' (2002) definition of strategy being about the future of organisations, and Edith Penrose (1959) assertion that companies grow in the directions set by their capabilities.

It has already been established that there can be no universally agreed-upon definition that meets all criteria, and since the current definition by Oyewobi (2014) fits the objective of the study within strategy research in construction, it is considered suitable for now.

As definitions within strategy are numerous, so are the perspectives that researchers view

strategy from. So far, the historical definitions of strategy were examined and the next section examines some of the views of strategy in order to understand the various perceptions of strategy that exist in the literature.

3.3 Alternative Strategy Perspectives/Evolution Of Strategy

Strategy perspectives are often referred to as strategy views or strategic typologies and are accepted as a means of explaining strategy as they are internally consistent (Parnell, 1997). The use of views of strategy makes it easier to distinguish how a stream of researchers approach the subject of strategy. Five views are examined in Table 3 via a systematic review from seminal authors within the body of knowledge in strategy research.

Table 3 Selected Views of strategy

SM View	Related Authors	Argument	Summary
Resource Based View	Ansoff (1965); Wernerfelt (1984)	Distinctive competencies are the basis of attaining competitive advantage	Firm-level resource, internal capabilities, and unique skills are critical to achieving competitive advantage.
	Penrose (1959); Rumelt (1984);	RBV identifies the internal resources as the key issue for determining a company's success.	Resources (Intangible or tangible) are key to generating an advantage that competitors find difficult to replicate
	Barney and Clark (2007); Chen, Ong & Hsu (2016)	Posit that the resource-based view (RBV) theory can be used to interpret responses to environmental factors and internal resource considerations in strategy development	Link of core competencies to resources; External environment; Organisational capabilities to leverage critical resources
Knowledge-Based View	Akhter (2003); Zack, McKeen & Singh (2009)	Firms can gain sustainable competitive advantages in hypercompetitive markets by developing organisational knowledge through strategic planning.	Knowledge is critical to competitive advantage; Having an appropriate knowledge-based strategy is key to sustainable competitive advantage
Dynamic Capability View	Teece et al. (1997); Eisenhardt & Martin (2000); Zahra et al. (2006)	Firms can gain competitive advantage via their ability to integrate, build and reconfigure internal and external competencies to address rapidly changing environments.	There should be a distinction between resources, assets, competencies, and capabilities within a firm, and these capabilities should be such that relates to being able identify its capabilities on an ongoing basis and develop them in response to changing

circumstances.

Market Based View	Porter (1980); Cravens et al. (2009); Mariel, K. & Minner, S.(2014)	The MBV sees a firms' performance as the result of its conduct influenced by the structure of the respective branch and market.	Market forces; External environment;
Strategy-as-Practice	Bourdieu (1969); Jarzabkowski (2005, 2007); Rouleau (2016)	Argues that strategy (-ising) comprises different forms of actions, interactions, and negotiations of multiple actors and the situated practices that they draw upon in accomplishing that activity.	Advocates studying: practitioners (those people who do the work of strategy); practices (the social, symbolic and material tools through which strategy work is done); and praxis (the flow of activity in which strategy is accomplished)

Table 3 gives an overview of various perspectives on strategy espoused by authors in the field over the last 60 years, providing a reference point for the analysis, and demonstration of the evolution of the discipline. Starting with the resource-based view, one of the earliest strategy views to the more recent strategy-as-practice paradigm, Table 3 provides an overview across 6 decades of research. The inclusion criteria for selecting these five were based on the researcher's breadth of reading the literature & familiarity with leading schools of thought in the field of strategy. These five views of strategy are now explored in detail for context and comparison.

3.3.1 Resource-Based View of Strategy

The argument for the resource-based view has already been outlined in table 3, and it

"...focuses on the use and deployment of resources [...], the development of resource-based core competencies and the eventual competitive advantage that results from this process" (Prior, 2003, pp. 2).

The resource-based view (RBV) has been a key benchmark for many studies within

strategic management (Prahalad and Hamel, 1990; Teece et al., 1997; Murphy, 2013). The central focus of attention for the RBV lies with firm-level resources (such as manpower, finances, know-how, etc.) rather than the industry-level analysis favoured by Porter (Green et al., 2008). The argument of RBV is that the overarching goals of strategy is to accomplish stated firm objectives and organisational goals using often limited resources (Nimwegen et al., 2008). The RBV also posed a counterargument to the earlier established industry-business environment focused view of Porter, by arguing that competitive advantage can only be sustainably sourced via the development of superior capabilities and resources (Barney, 1991).

The RBV also interprets responses to environmental factors and internal resource considerations during the decision-making process (Barney and Clark, 2007; Hillman et al., 2009). The RBV further suggests that companies should concentrate on the management of internal resources and find markets where these resources can be deployed to attain competitive advantage (Soosay et al., 2016). The RBV is an important view within strategy analysis because it assists strategists/managers in leveraging their firm's internal resources in an effort to identify resources (e.g. assets, capabilities and competencies) that hold the potential to deliver superior competitive advantages over competitors (Kraaijenbrink et al., 2010). A classical problem within strategy analysis is the issue of what is considered as a resource, and the RBV view takes into consideration that resources within firms are heterogeneous (Parker, 2014). The non-homogeneity of resources also implies that for them to be competitive in nature, they need to be valuable, scarce (rare), inimitable, non-substitutable, durable, appropriate and organisational focused (Barney, 2001; Jugdev and Mathur, 2013). This concept of uniqueness in the resource base was put forward by Barney (1997) and known as the VRIO (valuable, rare,

inimitable, organisational focused) framework shown in Figure 8.

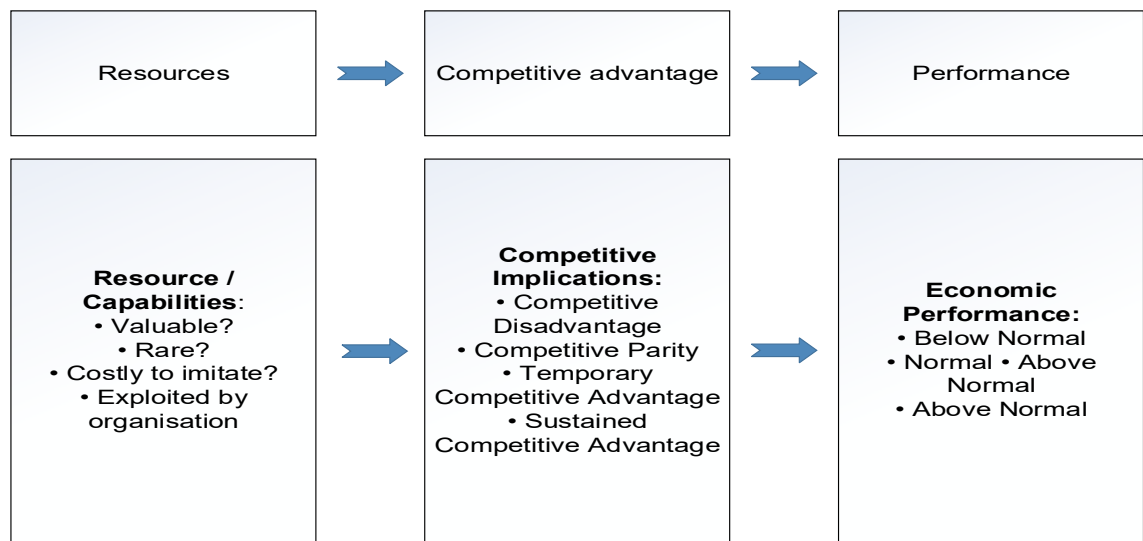


Figure 8 VRIO Framework (adapted from Barney, 1997)

The framework is shown in Figure 8, and outlines how firms can move beyond just holding resources into transforming it to competitiveness and improved performance (Jugdev and Mathur, 2013). The framework has since grown to become an important one for strategy analysts within practice and research domains. It also details how firm resources lead to competitive advantage, with resources translating to superior competitive advantage about its peers, leading to an increase in performance. This framework is widely regarded as the most significant theoretical framework of RBV (Newbert, 2007; Pamulu, 2010; Drouin & Jugdev, 2013). This framework is therefore fundamentally relevant to this study, which analyses how firms position themselves using resources for competitive advantage. The following section examines the knowledge-based view (KBV) of strategy analysis.

3.3.2 The Knowledge-Based View of the Firm (KBV)

The knowledge-based view of the firm espouses that knowledge is key resource that can

be used for attaining competitive advantage. Proponents of this view assert that knowledge-based activities such as product innovation (Pierce & Robinson, 1991; Patterson, 1998), process innovation (Rindfleisch and Moorman, 2001), and technology innovation (Zahra and Covin, 1993) are key resources that drive the strategy of a firm. The KBV is grounded in the RBV, however with knowledge as its primary resource focus, and this being what Grant (1991) referred to as an 'intangible resource'. Hitt et al. (2001) postulated that these types of intangible assets have greater potential to create firm capabilities that lead to sustainable competitive advantage in the modern economy. A number of researchers (Decarolis & Deeds, 1999); Haas and Hansen, 2005) have also reported that one of the most valuing enhancing forms of intangibles is a firm's knowledge-based resources or its investments in its intellectual capital. Thus, the KBV of the firm establishes the importance of knowledge as a key resource, however there has been little agreement on how to qualify or quantify knowledge assets or investments. The increasing dynamism of the business environment, with the advancement of technology in construction and changing client requirements leads to questions about maintaining competitive advantage via knowledge only.

Eisenhardt and Santos (2000) argued that in turbulent business environments, where industry dynamics, competitors, and customers are constantly changing, firms are able to sustain competitiveness in spite of the flux. In these kind of markets, knowledge could prove to be a critical edge above competitors and the comprehensiveness of this knowledge could prove to be vital within increasingly turbulent construction markets.

The challenge posed by markets in flux leads us to the dynamic capabilities approach, which argues that competitive advantage can only be maintained when a firm maintains dynamism in its organisational and managerial processes. This is explored in detail in the

next section.

3.3.3 The Dynamic Capabilities View (DCV)

The term “dynamic capabilities” refers to a firm’s ability to integrate, build, and reconfigure internal and external competencies to address rapidly changing environments (Teece and Pisano, 1994). The dynamic capabilities argument highlights that a firm’s resources alone are not the only key to competitive advantage, but its ability to reconfigure its operational routines in order to respond to changing business environments (Teece et al., 1997). The DCV is different from the KBV in that, while the latter considers knowledge as the key resource/source of competitive advantage, the dynamic capabilities literature places emphasis instead on the importance of the learning processes. These routines (or processes) also involve organisational and strategic processes through which the resource base of firms are altered by managers, i.e. the acquisition and shedding of resources, and its integration/recombination to generate new value-creating strategies (Grant, 1996). Examples of dynamic capabilities includes tangible assets (i.e. financial, technical) and intangibles assets (i.e. human, organisational and social) (Drouin and Jugdev, 2013). These capabilities and value creation activities can then be leveraged to build and reconfigure internal and external competencies to address rapidly changing environments (Teece et al., 1997). Thus, the focus of the DCV is on how firms can develop their capacity to deliberately create, extend, or modify its resource base for competitiveness (Helfat et al., 2007). This is particularly important for the construction industry in Ireland, which is currently undergoing serious skills shortage (resources) and may need to leverage its dynamic capabilities to achieve competitiveness. How do market conditions affect firm competitiveness? Another view of strategy that explores a market-oriented perspective is now explored.

3.3.4 The Market Based View (MBV)

The MBV espouses that competitive advantage arises from barriers to competition linked to the structure of the market (Makhija, 2003). This view of strategy is alternatively known as the market positioning view, and it places emphasis on the role of market conditions in developing a strategy for the firm (Claudine et al., 2016). This contrasts with the resource-based view (RBV), the focus of which is on firm resources and capabilities. There has been a continued debate on the relative merits and arguments of the two, with much discourse around under what conditions one might be preferred over the other. A case can be made for not relying on a one-sided approach to strategy analysis (i.e. either one or the other), but adopting a case-based approach to either using internal or external analysis. In their study of multi-industry study of leading high growth companies in Thailand, Nuntamanop et al. (2013) found evidence that each of the eleven business leaders surveyed applied both MBV and RBV of strategy. Therefore, it is not a case of one or the other, rather firms may adopt a blend of both views. In addition, not only can the MBV be blended with the RBV, but any other of the listed views may be blended with another.

The MBV is often referred to as an “outside-in” perspective (Bea & Haas, 2005), and argues that the competitive advantage and subsequent performance of a firm are largely dependent on the structure of its business environment. Examples of structural elements of the market has been identified in Porter’s five forces such as the entry barriers (Knetch, 2014). The MBV is not without critics, with some authors alluding to its focus on the respective branch and market, rather than emphasis on internal resources (Engert et al., 2016). Opponents of the MBV continuously pitch it against the resource-driven approach of the RBV, but who says they have to be two sides of the same coin?

The MBV and RBV still lack in the critical decision-making elements in the strategy process, especially the everyday activities that strategists engage in that culminate in decisions. These activities, those who engage in them and how they engage in them led to the exploration of more in-depth research in strategy, which evolved into strategy-as-practice that will now be explored in the next section.

3.3.5 Strategy-As-Practice

Strategy-As-Practice (SAP) as a view of strategy resulted partially from increasing dissatisfaction with current strategy research (Jarzabkowski & Spee, 2009) and this field of research has been gaining increasing prominence since the beginning of the 2000s, complementing previous views to strategy (Belmondo & Sargis, 2014). The foundational concept in SAP is that strategy should not merely be viewed as something a firm has, but should primarily be about what they do (Johnson et al., 2007). The core of the SAP perspective is activity focus and micro-processes, which help in developing a close understanding of what makes up strategy and strategising in practice (Johnson, Melin, & Whittington, 2003). This will involve either the study of specific practices carried out by managers within the firms or strategists themselves or the activities they carry out Jarzabkowski et al. (2007). SAP as a stream of strategy research does not intend to limit the analysis of strategy to how strategists [managers] interact with and deploy strategic practices, but concerns itself with all the different flows of activity by which strategy is actually done (e.g. Jarzabkowski 2005; et al. 2007; Johnson et al. 2007).

It is important to address a frequent source of confusion in strategy studies, particularly in relation to its novelty. Similarities that may lead to confusion with previous strategy views is understandable, due to the close relationship between them, but there are significant differences between the previous four views and the SAP, two of which are

identified here.

First, SAP employs a “practice-centric” approach (Whittington, 2007) as opposed to the “process-centric” approach employed in the other views, i.e. it investigates strategy as something firms do, not something they have. Secondly, strategy-as-practice focuses more on the way that strategising takes place in different contexts and among different practitioners [strategists] at different levels (Whittington, 2003). Substantially, strategy-as-practice differs from the conceptual formulation and implementation streams, as it is considered to be more of a perspective than a process. This implies that it explores strategy on a micro-level, rather than using broad viewpoints.

SAP further differentiates itself via focusing on the micro-practices within organisations (Golsorkhi et al. 2010), advocating a shift in attention from strategy as something a firm possesses, i.e. which exists, to something that they do. The increasing interest in SAP view of strategy stems from the broader concern of human actors, i.e. strategy in attaining competitiveness (Jarzabkowski 2004). Whittington (2006) explained that these strategists and what they do need to be brought back into the research landscape.

Studying SAP or the ‘doing of strategy’ involves investigating activities that result in a competitive advantage for the firm, as a consequence of the actions and interactions of multiple actors and the practices that they draw upon (Jarzabkowski, 2005). In strategy analysis, not all activities carried out by managers or actors within the firm can be termed as “strategic,” except if they affect the future direction of the firm. Hendry (2000) outlines that strategic activities are those that draw on strategic practices, and are linked to use of strategic plans, annual reviews, strategy workshops and other related discourses. Johnson et al., (2003) further stressed that activities are considered strategic to the extent that it influences the strategic outcomes, directions, survival and competitive advantage of the

firm, even where these consequences are not part of an intended and formally articulated strategy. Thus, only activities that encompass these themes and whose consequences affect the competitiveness of the firm are deemed strategic within this study, with the SAP view adopted particularly in the qualitative phase for conducting strategy analysis.

While the five views of strategy explained above are essential, it is also critical to avoid the trap of fixation on alternative definitions of strategy, concepts and codification (cf. Flanagan et al., 2007; Stuart et al., 2008), rather than considering strategy within the construction industry on its own merit and as a standalone business environment. These five views are analysed not with the intent of challenging the dominant interpretations as espoused by the authors, but viewing them as a set of mutually supporting discourses that are directly implicated in shaping the reality within which firms in construction operate.

The overarching theoretical foundation of this study is located at the centre of the *resource-based and strategy-as-practice views*. This is because the study explores the various routines, which construction organisations have developed to conduct their business, and these routines (decision making processes in this case) are considered the fundamental unit of analysis for this study (cf. Nelson and Winter, 1982). These routines (or the absence of them) determine whether or not the firm is likely to be able to survive in the long run. Barney (2001) argued that focusing on routines will eliminate the need to adopt alternative strategy-conduct-performance lenses or neo-classical microeconomics lenses. This emphasis on routines as opposed to conduct-performance or market-forces drivers (neo-classical economic views) aligns with the lens of strategy-as-practice (SAP) adopted in the study.

Several frameworks and models have been developed for addressing the topic of building a successful strategy, yet there is no agreement as to a unifying framework or definition

within the field. There are only attempts by researchers to present normative models, having some desirable attributes of what a good strategy should possess (Hax & Majluf, 1986). Strategy research in construction still lacks studies that explore strategy, not as a set of rules or stereotypical models, but exploring how firms engage with strategy. Therefore, this study first adopts the process centric view of strategy (stage I), then subsequently the SAP view (stage II) as a unifying theoretical framework for strategic decision-making within construction PSFs. The two-stage process is to add an extra layer of validation to the data obtained from the first stage. A chronological and systematic review of the literature on strategy has now been completed, with the conclusion that this study will adopt a blend of the RBV and SAP views of strategy.

The next section outlines the process involved in strategy analysis, including critical elements of the procedure involved.

3.4 Conducting Strategy Analysis

The steps in the process of conducting strategy analysis is usually homogenous and similar (Feurer & Chaharbaghi, 1997), with most authors outlining them as identification of strategic vision (mission, vision statements); objective setting; strategy formulation; strategy implementation; and strategy evaluation (Pearce and Robinson, 2000; Macmillan and Tampoe, 2000). However, there is no generally agreed route to any of the above stages of the strategic analysis. Authors in strategy research agree that the development of strategy is an ongoing process and that its primary concerns are with the identification of future direction and objectives of the firm, alongside an evaluation of its current position relative to the market (Naaranoja et al., 2007; Karuhanga, 2015). Strategy analysis should also involve the development of appropriate goals if they do not exist, putting measures in place for their implementation, evaluation, and subsequent

modification as the need arises (Dess et al., 2008; Hijji, 2014).

The process of formulation of strategy is a shared process and involves several actors ranging from top-level managers to clients/end-users. These part of the process involves complex interactions between individuals with diverse interests and views (Clarke & Fuller, 2010), and can either be externally-driven or driven from within the firm i.e. a firm's strategy can be shaped by factors from within the firm or from outside it (Arbab Kash et al., 2014). Grant (2003) identified three major forms of strategy formulation, based on a review of seminal work by other authors. The three forms are emergent-formal, systematic-rational (formal) and emergent. These three outline the formality of the formulation process as opposed to content or practices involved.

Strategy formulation requires synergy between top management, feedback from frontline managers and clients (Freeman and Gilbert, 1998); however, in practice it sometimes involves neither. It may also involve the identification of the firm's internal strengths and weaknesses and its external opportunities and threats (Ireland et al., 1987). These strengths and weaknesses must then be tailored to the company's business objectives (Singh et al., 2002), in a bid to outline how to convert their strengths into distinctive competencies, leveraging on opportunities within their business environment.

A theoretical guidance tool for strategy analysis developed during the literature review is presented in Figure 9, via a synthesis of literature on conducting strategy analysis.

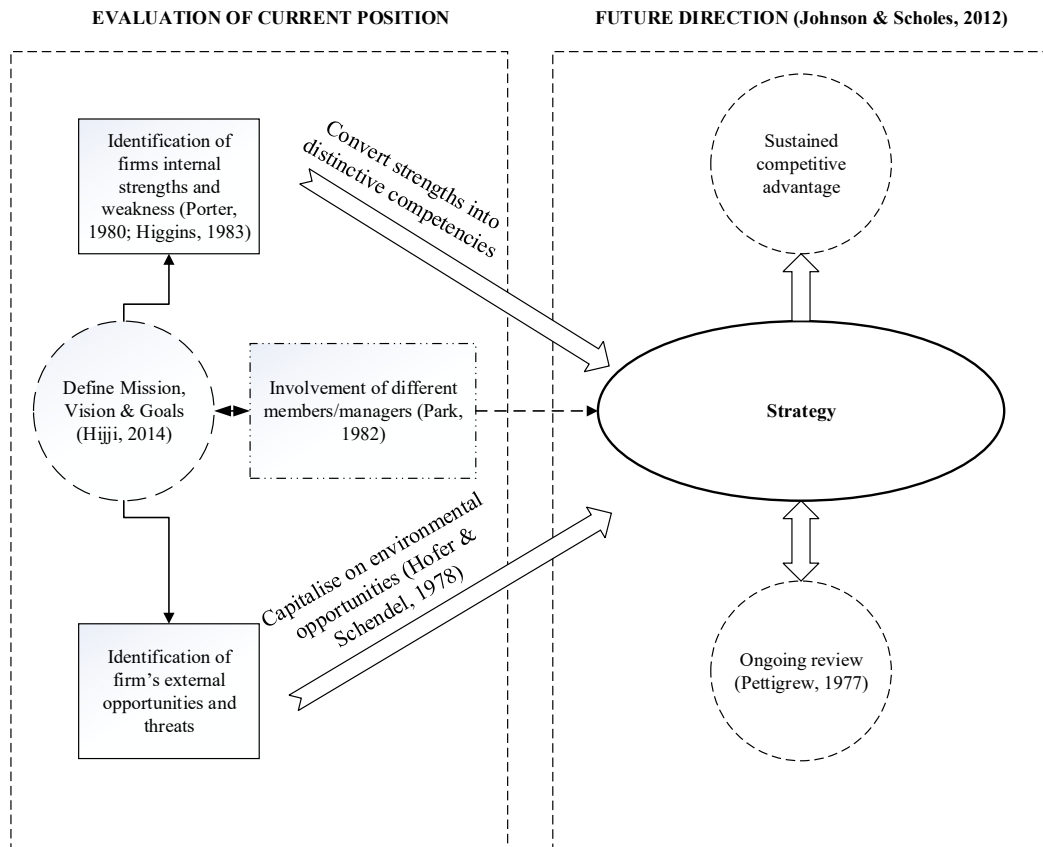


Figure 9 Structural outline of strategy formulation process

From the figure, it can be seen that the strategy should undergo continuous review (cf. Pettigrew, 1977) in order to meet the demands of the market, which is in constant flux (mainly in construction). The formulation of strategy should not be confused with strategic decision-making process, although they are both usually made at the highest level of the firm (or its pertinent unit) and involve long-range organisational commitment and investment of resources (Warszawski, 1996). In many cases, strategic decision-making and strategy formulation are interwoven; however, the former is an ongoing process, while the latter is usually once-off. In this study, both are considered as equal parts of a whole and not separately.

Key elements of the strategic decision-making process are explored in detail in the next section.

3.5 Strategic Decision Making Process Characteristics

The purpose of this section is to identify the characteristics of the strategic decision-making process. The characteristics explored under this section includes formality of the planning process, type, risk attitude, time horizon and dimensions influencing strategic decision-making. This section was largely derived from existing studies in the field.

3.5.1 Formality of Planning and Approach

Brews & Purohit (2007) outlined that planning formality is unequally distributed across firms, with the reasons for this difference largely unknown. Mintzberg and Lampel (1999) also outline that the deciding characteristic of the strategy process being “formal” is,

‘that the process is not just cerebral but formal, decomposable into distinct steps, delineated by checklists, and supported by techniques’ (p.22).

The formality under consideration in this section is the formal/structured process involved in strategic decision-making, i.e. whether a firm has a formal, written strategic plan (content).

The approach to strategy on the other hand is different from the plan formality. Some studies have identified both formal and incremental/emergent approaches to the planning process and suggested that there are possibilities of other types of planning (Brews & Hunt, 1999). Warszawski (1996) also outlined that the formality of the strategic decision-making process is affected by the organisational structure and culture. This may be even reduced down to perceived trivial issues such as the adoption of first name terms by Hewlett Packard Staff, in order to reduce process formality (Robert & Wallace, 2004), and exclusion of formality in the strategy communication phase has potential to improve the speed of decision making.

In the current study, four approaches to strategy are adopted, ergo: formal, emergent, and technological driven and internal resource-driven. The two additional categories are added based on compelling evidence from the literature, with these two categories linked to the role which technology and internal resources play in the approach to strategy (Stewart, 2000). The nature of the strategists' i.e. strategic typology, involved in decision-making is explored in the following section.

3.5.2 Strategic Types

Miles and Snow (1978) posit that a firm's approach to strategy has an impact on the formality of the process, and they named these approaches "strategic types." They argue that although each firm may adopt different strategies based upon their unique characteristics, their behavioural patterns centres on four organisational types namely: prospector, analyser, defender, and reactor. The Miles and Snow typology enhance understanding of how organisations interact with the business environment i.e. their behaviour to environmental forces. Their strategic typologies deal mainly with a firm's product market domain selection strategies, particularly how they respond to market forces.

Only a handful of studies in construction such as Murphy (2013) and Oyewobi (2014) have explored how the typologies enhance understanding of construction organisations and the influence of strategists on their interaction with the business environment. The four strategic types in detail:

- Prospector firms: Prospector firms are those who seek to offer new services and enter new markets. They are mostly technology-driven and strive to provide innovative services into a market. This kind of firm is quick to spot and react to opportunities

and often leads entry into a new market.

- Defender firms: These firms tend to have a narrow market domain and therefore tend to create and maintain a niche with a limited range of products and services. There is little search for new opportunities outside the current domain of work. It tries to protect the existing market share through lower prices, higher quality, shorter delivery times, and increased value for the client. The organisational structure of the company is centralised with a formal hierarchy.
- Analyser firms: Firms with the analyser orientation often display features of a defender and prospector. This kind of company seeks stable markets and follows other competitors into new markets. They are not uncomfortable with change, and their organisational structures are conditioned to cope with calm and evolving markets.
- Reactor firms: Firms in this group do not have clearly articulated long-term goals or strategies, and consequently no uniform behaviour pattern. It does not try to exploit opportunities or maintain a defined market.

These strategic typologies were developed following investigations conducted within a variety of industry settings and its potential application to any industry is a key advantage (Murphy, 2011). The taxonomy is particularly suited for the empirical investigations of an industry/sector where exploratory research is being undertaken. One key criticism of the Miles & Snow (1978) typology is that some businesses may select a specific strategic type based on its unique internal strengths (capabilities) and external (environment) circumstances, employing strategic types that may not, in fact, be cleanly interpretable as the any of the four categories (Desarbo et al., 2005). Within this work, while the firms are broadly classified into the four categories, more information is sought to explore the qualitative aspect of the classification to gain further information beyond the typologies.

The nature of the strategist as outlined by Miles & Snow (1978) will affect how the firm takes risks; hence the next section will explore how the risk attitude of the strategists influence strategic decision making. Risk attitude forms yet another critical aspect of the strategic decision-making process, particularly concerning the role of the strategist in terms of their attitude (affinity/aversion) to risk. This is because the risk attitude of the strategist will have a consequent effect on the overall risk profile of the firm, thus impacting how decisions are made.

3.5.3 Risk Attitude

The risk attitude of a firm is primarily concerned with how the firm takes decisions within its selected business environment. Hillson et al. (2004) describe risk attitude as a “...chosen state of mind with regard to [...] uncertainties that could have a positive or negative effect on objectives” (pp. 4). The definition above outlines that the risk attitude eventually impacts the (corporate) objectives. Baird and Thomas (1990) pointed out that there is a lack of an accepted model of measuring risk-attitude among decision-makers, one can explore the interplay between organisational processes, the strategist and the business environment to understand attitudes to risk.

Due to firms and strategists having different risk attitudes, there is a significant role played by managers in defining the eventual path taken by the firm. Particularly within the construction sector, whose market is prone to fluctuations and uncertainty, managers take differing positions relative to risk. Ingram & Thompson (2012) proposed four categories for assessing risk attitudes. These categories include:

- Pragmatists, who view the world as being uncertain and unpredictable;
- Conservators, who believe the world is at high risk and adopt a conservative

approach;

- Maximisers, who embrace risks and explore potentials by viewing the world as fundamentally self-correcting; and,
- Managers, who believe the world is moderately risky, but not too risky for firms that have proper guidance.

Pamulu (2010) considered risk attitude as being linked to the eventual conduct of the strategists in the market as risk-averse managers will see the business environment as “very risky” and as a consequence act with utmost care when making decisions to safeguard against any missteps. Oyewobi (2014) in his study of South African contracting firms also established a link between strategy and risk, positioning this study for a more in-depth investigation on construction PSFs in Ireland. He concluded that the approach of firms to strategy (whether planned or emergent) influences decision-making, with firms who are risk averse being prone to have a formal, planned approach to decision-making. This approach is called ‘mechanistic’ and impact the eventual business strategic choices selected by the firm (Govindarajan, 1988; Miller, 1988).

These four risk attitudes are adopted in this study for strategy analysis. Since the business environment is continually changing, it is also vital to examine the timeframe within which strategic decisions are made.

3.5.4 Planning Horizon

The construction sector is considered to be turbulent with a large degree of uncertainty, and subject to emergent, unexpected and exogenous disturbances (Aaltonen and Sivonen, 2009). As a result, it is vital that plans made within the context of such fast changing and uncertain industry be reviewed and adjusted to meet the requirements of clients, industry

standards, and new corporate objectives. This constantly changing dynamic of the external environment suggests that strategy is not expected to remain static, making the subject of the time horizon of reviewing it important for consideration. Harrison (1995) argued that planning horizons represent time spans over which strategy is expected to be implemented, resulting in the attainment of the strategic objectives. The time horizon for strategic planning may range from annual to as much as five years (Alogan & Yet[ıdot]ş, 2006), and within turbulent business environments where changes occur frequently and suddenly, the effect of selecting shorter or longer planning cycles warrants further investigation. Although, there is no optimal established planning horizon within the literature for construction organisations, this study seeks to understand how differences in the time horizon impacts the decision-making process and the overall strategy.

At this stage, it is important to recognise that there are several other dimensions that influence the strategic decision making process and these vary across different types of firms. The next section will now aggregate these dimensions under three key themes: *internal, evaluation, and external dimensions*. These three dimensions were developed in the course of the research and aligned with key themes within the literature. They are analysed in detail in the next section.

3.5.5 Dimensions of Strategic Decision-Making Process

As outlined above, these dimensions were grouped together to investigate other key criteria in the decision-making process that are not covered under the broad strategy themes. Oyewobi, Windapo & Rotimi (2013) were the first to point to the decision-making dimensions of strategy. They outline the environmental dimensions (external), organisational dimensions (internal) and performance (evaluation) dimensions. The three dimensions are now adopted for the analysis of construction PSFs for the first time.

The three dimensions are broken down into fifteen sub-themes with the first eight linked to internal dimensions, four linked to evaluation and three linked to external dimensions. The first set of sub-themes under the internal dimensions was designed to examine other key decision-making process characteristics internal to the firm. The second set of sub-themes under the evaluation dimensions what firms considered critical to measuring/evaluating the impact of the decisions made. The third set of sub-themes examined under the external dimensions relate to issues external to the firm that impact the strategic decision-making process. The three main dimensions and their sub-themes are now explained in in detail below.

3.5.5.1 Internal dimensions

Flow and participation: Participation is a key component in strategy analysis, and the level of participation may influence the sense of ownership and implementation of a strategic plan (Maister, 2003). There is little evidence of the degree of participation in construction PSFs in the strategic decision-making process. Elbanna (2010) outlined that CEO/managing director and board of directors are usually the ones that participate the most in decision-making, with the process being mostly top-down. This is supported with evidence within construction management research, reinforcing that strategy initiatives have a top-down flow with limited company-wide participation (Price et al., 2003; Dansoh, 2005). Carvalho, Vieira dos Santos and Neto (2013) in their research in the Brazilian power sector outline that the flow in the decision-making process points to the level of strategic maturity of the firm and its propensity to be innovative in the long run. In the Irish construction sector, there is limited evidence of the flow of decision-making, making it a critical internal dimension to be studied.

Repeat business: this process involves targeting clients that have been served before by

the company. Repeat business has been linked to greater customer loyalty and business performance (Chen, Paulraj and Lado, 2004), and it is a critical component of strategy for firms seeking to establish a long-term relationship with their clients (Awuah, 2007). Pheng and Gracia (2002) also found that gaining repeat business from existing clients was critical to building customer loyalty, thereby reinforcing the need to explore this within construction.

Internal reviews: this is another key internal dimensions in strategic decision making, and it consists of key factors such as internal quality assurance reviews e.g. ISO certification (Murphy, 2011) and internal business process reviews (Perrott, 2011). Examples of business process reviews includes marketing and IT standards.

Investments: under this area, three key points are considered namely, investment in research and development (Preece et al., 2016), investment in staff training and development (Úbeda-García et al., 2014), and employment of external consultants (Aldehayyat, 2011).

These sub-themes are applied and explored during the data collection phase, as they are all critical to the strategic decision-making process. The next dimension to be considered is the evaluation dimension, which deals with measures that are considered by firms during strategy assessment.

3.5.5.2 Evaluation Dimensions

Strategy tools: the introduction of strategy tools is in order to simplify the complex strategic decision-making process (Murphy, 2011). These tools are considered to be very useful in guiding the firm in the direction of its strategic decisions (Naaranoja, Haapalainen, and Lonka, 2007). There are several strategy tools available for strategy evaluation such as the *Balanced Scorecard*, *SWOT*, *Pareto Analysis*, *PESTEL tool*, etc,

however, their adoption in practice, particularly in construction is still quite rare. Price et al. (2003) presented evidence that suggests that firms operating in the construction industry do not favour the use of strategic planning tools.

Strategy Communication: the communication of strategic decisions is critical to shaping the corporate agenda (Ocasio and Joseph, 2008). The nature of strategic communications -whether formalised or not- will result in either clarity or confusion in decision-making. Do strategy managers need to emphasise formal communication or informal? Which of these work best and lead to better understanding of strategic decisions? These questions are answered under this sub-theme later in the study as recommended by Charest, Bouffard, and Zajmovic (2016). Understanding how these decisions are communicated whether formal or informally is critical for evaluating the strategic decision-making process, and in particular the success of the strategy implementation stage (which lies outside the scope of the current research).

Performance measurement and target setting: although the performance measurement is not the central focus of this study, performance measurement is critical for firms when evaluating strategic decisions. Performance management is often used to determine whether a manager, or selected strategy has been successful in meeting organisational objectives (Oyewobi & Windapo, 2015). Different measures are used in assessing performance within construction, and these can either be numerical (linked to profitability/turnover) or measured using other factors (Ye, Shen & Tan, 2010; Mbachu & Frei, 2011). Both numerical and non-numerical performance measures are assessed in the study, not in a bid to link strategic decision-making to performance, but to evaluate its use as a performance criterion within construction firms.

3.5.5.3 External Dimensions

Competitor analysis: this process involves benchmarking one's firm against the competition and to understand how the competitor ranks in terms of strategy (Alsem, 2019). Competitor analysis should be a central element in strategic decision making as it helps the firm to plan and control its strategy in line with happenings in the same industry. Chen (1996) argues that conducting competitor analysis allows a firm to measure market commonality (how its service offerings compare with that available in the market), and resource similarity (in comparison to competitors). Competitor analysis is important for the external dimensions of strategic decision-making in this study as it positions Ireland as having a unique market profile and strategic resource endowment.

Industry analysis: the introduction of industry analysis as a sub-theme for external dimensions influencing decision-making is because it will help illuminate the competitive nature within firms in the industry (Price & Newson, 2003). This sub-theme was included not to specify what type of industry analysis is conducted, but whether or not it was conducted and linked to strategic decision making.

Economic analysis: this involves analysis of the entire economy using both micro and macroeconomic indicators. This data can often be obtained via the Central Statistics Office in Ireland or the Eurostat website for EU wide data. This sub-theme was included to see if firms perceived economic analysis as being critical to the strategic decision-making process within their organisations (Cheah & Chew, 2007).

Having explored all the sub-themes within the three broad strategic decision-making dimensions put forward, the strategic choices available to managers is now explored.

3.6 Strategic choice

The strategic decision-making process requires firms to make choices between alternative

strategies (Murphy, 2011). Strategic choice relates to the domain in which the organisation will operate (Kald, Nilsson & Rapp, 2000) for the purposes of achieving their future end goal. The strategic choice is both inward-focused (dependent upon internal competencies/resources) and externally focused (market-focused), as it explores conditions within the company, particularly the interrelationship of the direction which the firms seek to pursue and organisational structure and competitive advantage. Canals (2001) argues that some of the interrelated factors related to strategic choice include the firm's external context, internal context, business choice, resources and capabilities, and the strategic decisions and choices made about growth options. Construction firm's external context has already been discussed in Chapter 2 in the Irish context, and the strategic choices/alternatives are now considered more fully.

3.6.1 Corporate-Level Strategy

Corporate strategy is the overriding future end goal and relates to a firm's entire business (Bowman & Helfat, 2001). Corporate-level strategy is concerned with the choices managers must make, particularly concerning how to compete, select value creation activities and whether to enter, consolidate, or exit businesses for the maximisation of long-term profitability (Andrews, 1987). The three main types of corporate strategies are growth, stability, and renewal (Robbins & Coulter, 2012).

A growth strategy may involve firm expansion in the number of markets served or services offered (Porter, 1980) in order to increase the sales and profit of the firm (García-Pérez et al., 2014). Firms align their internal functions with the external environment by adopting different growth strategies (Cheah & Chew, 2005). Common growth strategies include international/foreign expansion, mergers, acquisitions, and partnerships (Cheah & Garvin, 2004; Cheah & Chew, 2005; Murphy, 2011). Alam & Khan (2014) reports

that large firms seek to grow mainly via mergers and acquisitions. Lebedev et al. (2014) also report that mergers and acquisitions (M & A) are reputed to be the fastest firm growth strategy, however there is little evidence of this preferred growth strategies adopted in construction firms, particularly in CPSFs.

Stability strategy occurs when a firm seeks to keep its current market share and maintain its competitive position therein. Within a turbulent business environment, this strategy may be the preferred option to safeguard the firm's survival through an economic downturn (Sherman et al., 2007)

The third corporate strategy, renewal, occurs when perhaps due to declining performance or market change, may require a considerable change in the status quo and includes retrenchment/downsizing or turnaround strategies (Robbins & Coulter, 2012). Downsizing constitutes a set of activities, undertaken by the management of a company in order to improve fast-changing efficiency, productivity, and competitiveness. It can mean a reduction in organisational size or sets of activities targeted at reducing organisational efficiency (Freeman & Cameron, 1993). Turnaround strategies, on the other hand, seek to understand how firms 'turnaround' from organisational decline (cf. Trahms et al., 2013; McKinley et al., 2014), and usually involve considerable change.

A fourth category of corporate strategic choice known as a combination strategy (Porter, 1980), may occur if a company pursues two corporate strategies simultaneously (e.g expansion and maintenance or maintenance and downsizing). This strategy is possible in circumstances wherein it is possible to segment the market.

Corporate strategy in construction professional service firms in Ireland has rarely been investigated, and at the time of writing, no known study providing comparison across professions operating with the sector has been undertaken. It is therefore incumbent that

this perceptible gap is addressed in order to determine if corporate strategy of collaborating firms in the construction project team are aligned, given the potential impact on firm (and project) performance.

3.6.2 Business-Level Strategies

Business level strategy relates to how a company competes to achieve the corporate strategy. Business strategy is grounded in the seminal work of Porter (1980; 1985), who espoused three generic strategies: cost leadership, differentiation and focus. These strategies seek to outline the way an organisation positions itself in the marketplace to achieve the corporate goal and gain competitive advantage. Various positioning strategies can be used in different industry settings (Porter, 1980). Porter's business strategies appear to be the preferred mechanism for identifying the strategic options/choice pursued by construction firms, as several authors have utilised them when analysing Irish construction strategy (Flemming, 2011; Murphy, 2013; Tansey et al., 2014). The focus strategy is sometimes extended to become "cost-focus" and "differentiation-focus"(Porter, 1980; 1985). Another variation is what Porter, terms as being “stuck in the middle”, which occurs when firms decide to adopt more than one of the successful generic strategies in their business.

Some authors have criticised Porter's work, particularly his notion of being ‘stuck in the middle,’ with claims that a combination of cost leadership and differentiation can also be a valid option (e.g., Miller and Dess, 1993). This criticism is taken into account in this study and the cost-differentiation option included as part of the business strategy options. A combination of generic strategies (hybrid strategies) may be ideal for achieving competitive advantage (Tansey et al., 2014), in SMEs (Spanos et al., 2004), and even during times of economic downturn (Wu et al., 2007).

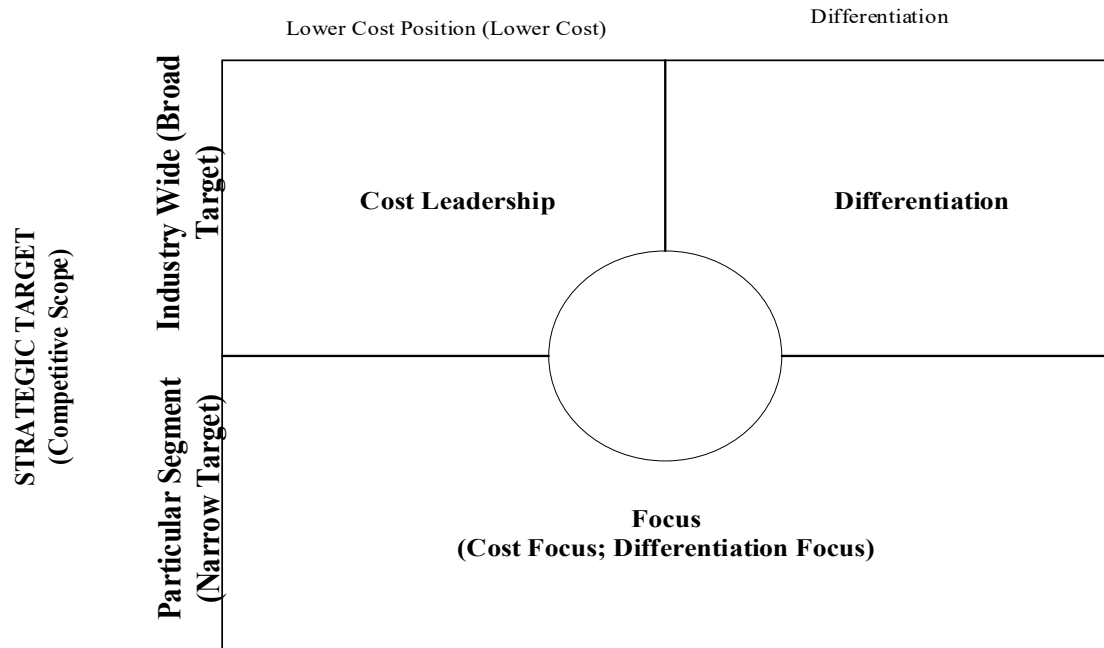


Figure 10 Porter's (1980, 1985) three generic strategies model

Figure 10 above provides a graphical representation of the generic strategies as proposed by Porter (1980, 1985). In the figure, the different generic strategies and market segments that their offerings are targeted towards are outlined. Since the primary concern of business-level strategy is how firms will achieve their corporate objectives (Murphy, 2013), it is important for firms to understand how they can position their business relative to the target market.

Porter (1980; 1985) asserts that for any business to gain sustained competitive advantage, it will have to pursue one of the three generic competitive strategies. However, studies within construction have shown that some firms employ as many as all three generic strategies, leaving them “stuck in the middle” (Price & Newson, 2003). The cost-leadership strategy requires organisations to improve their competitiveness by being the lowest responsive tenderer, reducing production costs or targeting minimum prices for its construction activities (Price and Newson, 2003). When a firm decides to pursue the

differentiation strategy, it does not preclude it from incurring costs, but its principal essence is to enable it to differentiate its service offerings from rivals by sustaining the uniqueness of their product(s) in the industry (Dikmen & Birgonul, 2003).

Lastly, the focus strategy can be used by an organisation in gaining competitive advantage via the creation of a niche market instead of competing broadly (Porter, 1980). Porter, however, was quick to caution that organisations may become “stuck in the middle” if they decide to adopt more than one of the successful generic strategies in their business. These kinds of firms are usually thought to have no clearly defined strategy as reported by Murphy (2013) in the study of QS firms in Ireland.

Within this group, Leitner & Guldenberg (2010) assert that firms who are stuck-in-the-middle presents a viable choice, especially for SMEs. In their research, they found that companies, which changed their generic strategy, did not produce inferior results when compared to firms who held a strategy over 10 years. This argument is supported by their findings that firms that follow more than one generic strategy outperform companies with no generic strategy. While this study did not measure profitability or performance changes, it explores the impact of having no defined strategy in contrast to having one or more defined generic strategy.

The corporate and business level strategies explored above lead to multiple growth opportunities for firms, giving scope for making growth-related choices. Prior studies have investigated these choices and other decision-making characteristics in manufacturing (Chenhall, 2005), construction (Pamulu, 2010), Hospitality (Olsen, 2004) among other sectors, however, not much research investigation have explored the topic within PSFs, particularly in construction. The strategy process in professional service firms will now be explored further in the next section.

3.7 Strategic Management of PSFs

Savan (1989) defines a profession or groups of professions as “groups which apply special knowledge in the service of a client” (p. 179). People engaged in a profession are termed “professionals”, and they are distinguished from other complex social institutions by their synonymy with purpose, intellectual tradition, and fiduciary relationships (Lennertz, 1991). A further characteristic of a profession is its self-regulation by a code of ethics (Claypool et al., 1990) and its role as a moral community (Camenisch, 1983). Having defined what a profession is, the question remains about what constitutes a professional service firm (PSF). Von Nordenflycht (2010) explained that PSFs ought to be viewed in the light of these three essential characteristics: knowledge intensity, low capital intensity, and a professionalised workforce (professionals). These attributes of PSFs make them unique, particularly the high knowledge intensity nature of the firms, meaning they have abilities beyond average understanding.

Professional service firms are known for “intangibility”, and several authors have explored key issues about the management of these firms including factors such as the heterogeneous nature of their offerings (Shostack, 1977) and perishability (cannot be stored or carried forward; Zeithaml et al 1985). Løwendahl (2007) particularly outlined that there are five (5) critical issues that make the strategic management of PSFs unique, namely:

- (i) Intangible outputs
- (ii) Invisible Assets
- (iii) Interaction with clients
- (iv) Innovation (tailor-made solutions)
- (v) Information asymmetry.

These attributes and the human capital asset base of PSFs make the strategic analysis of interest to construction researchers. Maister (1982) outlined the reputation challenge and human capital reliance creates a problem of ‘balancing’ the relationship between the skills of the people employed, and the service offered. This is true of construction PSFs, who are required to collaborate on projects that have long cycles and faced with uncertainty. Løwendahl (2007) further stressed that when conducting strategy analysis of PSFs, three key areas must be given attention: balancing efficiency (minimising costs), effectiveness (service quality/customer satisfaction) and employee (partner) satisfaction.

Although these issues look similar to the generic strategies espoused by Porter (1980, 1985), Løwendahl warns that PSFs are “.... very different...”, and cannot be analysed using theories of strategy and organisation developed within industrial corporations. Thus, a combination of established theories and “custom-made” approaches are employed in this study.

Challenges that have been identified with conducting strategy analysis in PSFs includes their emphasis on professional value, such as reputation, development or work pleasure (Bos-de Vos et al., 2016). One of the key challenges of strategy analysis in PSFs is that their knowledge-intensive nature may result in them becoming like “herding cats” (Lowendahl, 2000). The phrase ‘herding cats’ is used when referring to something involving difficulty in coordinating different groups of people. Since the main resource base of PSFs is centred around professionals (people), a suitable starting-point for addressing the challenge of managing them is balancing the use of the personal judgement of the firm’s individual professionals on the one hand, while maintaining a shared vision and firm objective on the other (cf. Lowendahl, 2000). Another challenge of studying PSFs, particularly within the construction industry in Ireland, is that the majority of the

studies are limited to one profession (e.g. Flemming, 2011). This single profession focus makes it difficult to get a broad picture of the strategy process across the industry. In addition, the project-centrism of construction poses another challenge (Seriki & Murphy, 2018).

Furthermore, there is a paucity of experiential and practice-focused studies in construction in Ireland (Tansey et al., 2017), in addition to the tendency to focus on a single profession, rather than providing a cross-professional analysis, which reflects the multidisciplinary nature of construction project teams. For example, Flemming (2011) focused on Irish architectural practices; Murphy (2013), focused on Irish quantity surveying practices, but neither compared across professions. Thus, a holistic study is warranted to explore PSFs across professions in the construction industry (architectural, engineering and surveying).

Having outlined that most strategy studies in construction PSFs have been limited in scope and discipline coverage, the generalisability of such studies is problematic. Therefore, there is a need for multidisciplinary studies such as this, conducting strategy analysis across professions and investigating the similarity/disparities in strategic decision-making characteristics therein. As stated earlier, even though PSFs are highly knowledge-intensive, the nexus between strategy and this knowledge intensity is not well understood, particularly on a micro-level within the context of construction. Thus, exploring the strategy process in these knowledge-intensive and unique firms is further justified, particularly within the complex construction industry in Ireland.

3.8 Summary

In this chapter, a rigorous review of the literature was undertaken, starting with defining strategy and exploring its historical dimensions and understanding to date. The review in

this chapter then explored alternative strategy perspectives ranging from the resource-based view to the current evolution of strategy-as-practice. The chapter also examined the theoretical evidence around conducting strategy analysis and competitiveness, exploring key dimensions of the strategic decision-making process. Afterwards, elements of strategic choices selected by firms are also explored, mainly corporate, business and growth strategies. The linkages between strategic decision-making and the unique nature of professional service firms are also explored, positioning PSFs into the broader body of management literature.

Key things to note within the review in this chapter is the interconnected nature of the strategy views, significance of firm resources and capabilities, and the current emphasis on practice-based studies (i.e. studies exploring strategy not as something a firm has, but what it does). The literature review also outlined elements of the strategic decision-making process that are considered in the analysis, explaining why they are critical to the study and the industry under investigation.

Overall, this chapter has outlined that strategy is an established field in management research, and decision-making process characteristics have rarely been investigated within construction. The classical problem of exploring strategy process in professional service firms is also discussed, with the nature of these firms discussed in the light of the complex construction industry. Therefore, identifying the process involved in strategic decision-making is critical for achieving competitive advantage within the construction market in Ireland. Since the central focus of this study is PSFs in the construction sector, the next section will now review literature applicable to PSFs in the industry.

4. STRATEGIC DECISION-MAKING PROCESS IN CONSTRUCTION PROFESSIONAL SERVICE FIRMS (CPSF's)

4.1 Introduction

This chapter focuses on the strategic decision-making process in construction professional service firms (CPSFs) to determine the current state of knowledge regarding strategic decision-making in construction, thereafter in CPSFs. The investigation explores the nature and unique characteristics of PSF's. Various terminology is used in the study of CPSF's. CPSFs are addressed as business and professional services (BPS) firms by Daniels and Bryson (2005), professional service operation (PSO) by Lewis & Brown (2012), construction professional services (CPSs) by Lu et al. (2014) and global professional service firms (GPSFs) by Boussebaa (2015) amongst other nomenclature. For clarity the preferred nomenclature in reference to professional service firms within construction is CPSF. The chapter is structured as illustrated in Figure 11:

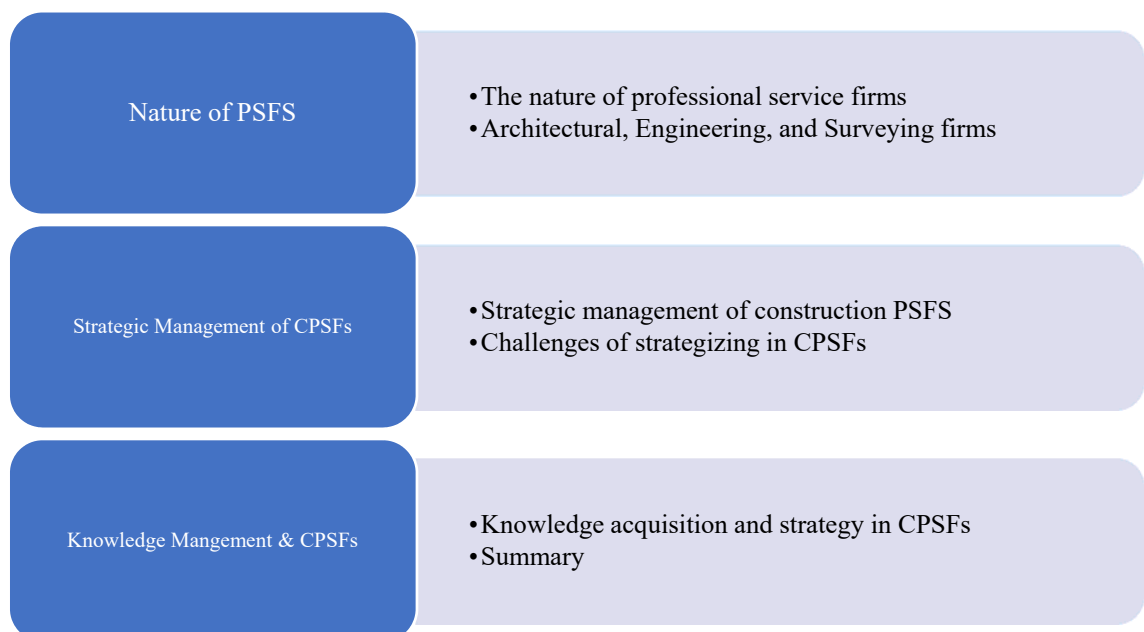


Figure 11 Chapter 4 outline

4.2 Strategy in Construction

In the past three decades, several researchers have examined the strategy in construction along various themes, with early investigation conducted by Betts and Ofori (1992) relating to the dearth of strategy research in construction, and Fellows (1993), who highlighted the restrictive nature of Porter's three generic competitive strategies, to more recent inquiries such as Phua (2006) or Li & Ling (2012), whose work focused more on the performance-related dynamics in construction. Post-2008 recession, much of the discourse on strategy in construction has focused on the strategy-performance matrix (Oyewobi & Windapo, 2015), with less focus on the process of the development of the strategy itself and how strategic decisions are reached.

RBV theorists focus on how resource differentials and the limited flexibility of such resources can lead to competitive advantage (e.g. Phua, 2006), while their dynamic capabilities counterparts focus put forward a counter-argument that resources alone cannot translate to superior performance unless they are established into capabilities (Chew et al., 2008). Yet, we still do not know how these CPSF managers engage in the decision-making process in allocating the said resources to achieve competitiveness; neither has construction research investigated how these firms develop those dynamic capabilities that will lead to competitive advantage.

Wolf and Floyd (2013) outlined that construction managers take an indifferent attitude towards strategy, despite research showing that strategy is linked to superior competitive advantage. Managers in construction are often too entrenched in a project management tradition, as opposed to a strategic one (Chinowsky, 2000). This has resulted in downplaying strategic issues such as corporate-level management and other matters, with firms' content to plan one project at a time (Cheah & Chew, 2005). The construction

industry, which is renowned for its resistance to change and rigidity, is slowly yielding to change, and this is expected to continue over the long term (Smith & Love, 2001), evidenced by increasing attention being paid to strategy by construction researchers. Flanagan et al. (2007), however, argue that it may be more strenuous to apply strategic analysis to the construction industry, due to its highly heterogeneous nature in comparison to other generic industries. How then should strategic analysis be conducted in construction?

Whittington (2006) outlined that managers are the link between strategy practice (social, symbolic and material tools/processes) and praxis (how strategic activity is accomplished). These managers form the critical link between organisational and extra-organisational levels (Jarzabkowski & Spee, 2009). Thus, managers in construction are very important in strategic analysis since the realisation of strategic goals depends on them (Jarzabkowski et al., 2007). In addition, for the strategy to be effective within construction organisations, they need to be properly interpreted in the organisational context by people within the organisations (Nordqvist and Melin, 2008). Therefore, this study focuses on managers in order to draw on their expertise at different levels, and also because they wield significant influence on their organisations. Whittington (2006) stated that eventual strategy practices will emerge from praxis, and this study is correct in focusing on managers within construction firms, allowing them to reflect on their firm's practices and eventually presenting a possibility to influence their overall strategy.

Another critical issue in strategic decision-making in construction firms are the tools adopted in the development and tracking of strategy. Wolf and Floyd (2013) outlined four main classes of tools used in strategic management, namely: *plans, workshops, analytical tools and creativity tools*. Although there are other tools in practice such as *artificial*

intelligence tools used for strategising, it is reasonable to conclude that they lie within these broad categories. Table 4 lists some of the tools highlighted by construction researchers, using Wolf and Floyd’s categories. The list provides an overview of strategy praxis focused research in construction and key authors that include related findings in their work. The list is not exhaustive; however, as there are several custom-made tools developed within construction organisations for strategising, however it does provide useful insight as to the range of strategy tools available.

Table 4 Strategy tools used in Construction (adapted from Wolf and Floyd, 2013)

Strategy tools	Tool types	Authors
Planning tools	Vision statement; balance score cards; Hoshin management	Naaranoja, Haapalainen & Lonka (2007) ; Yang & Yeh (2009)
Strategy workshops	Project meetings; site meetings; board meetings; managerial brainstorming sessions;	Stewart & Spencer (2006); Sage et al., (2012)
Analytical tools	Operational cost estimating, S-curves and target costing; Six-sigma, Management information tools; SWOT Analysis, PESTEL, Last Planner.	Kern & Formoso (2006); Kaka & Price (1991); Stewart & Spencer (2006); Kaluarachchi & Jones (2007)
Creative tools	Performance evaluation tools, emotional intelligence tools, strategy games and quizzes, artefacts.	Koleoso et al (2013)

The tools for the development and monitoring of strategy outlined in Table 4 do not discount the role of practitioners, particularly managers in any way. Practitioners are the doers of strategy, the strategists (Aaltonen, 2007), and Koch et al. (2015) in their study found that a lot of attention is paid to tools, with less focus on middle managers. These managers play a crucial role in mediating and translating of strategy, and their leadership in operations is of crucial importance for the successful implementation of strategy,

irrespective of whether they are responsible for change or not. This further provides a cogent prerogative for focusing on senior managers within construction firms in this study, exploring how they interact with strategy tools and how this affects firm strategy.

4.3 Strategy in the Irish Construction Industry

Empirical investigations pertaining to strategy in the Irish construction sector are relatively scarce compared to research into other sectors of the economy (Murphy, 2013). One of the early researchers into strategy in the Irish construction industry was Gunnigan (1999), who investigated the management of change in the industry. The focus of the investigation was on change management strategies in the Irish context of construction, the conclusions from which determined that implementing change was difficult to achieve in the Irish construction industry. This is because change is restricted by the structure of construction organisations (being project-driven, rather than enterprise-driven) and due to the proliferation of construction-related activities with departments in the government. Hore & West (2005) explored the Information Communication Technologies (ICT) strategies used during the purchasing process in construction in Ireland, outlining drivers and barriers to the adoption of same from the contractor's and supplier's perspective. Graham & Thomas (2007) also explored the knowledge management processes of Irish construction firms, conducting a case study of lessons learned practices within a large project construction firm. Their findings identified KM processes and adopted practices, particularly the lessons learned approach, outlining that the method proved essential for learning within construction project organisations.

Redmond et al. (2010) explored the IT strategies employed by Irish Small to Medium Size Enterprises (SMEs) in construction, channelling focus to e-business solutions in the construction industry. Spillane et al. (2011) explored the various managerial issues

encountered by UK/Irish contractors in the management of materials, while working on restricted construction sites in urban areas, however did not determine the comparative applicability to CPSF's. Although most of these strategy studies fall within the seven strategic fields of corporate strategy put forward by Cheah & Garvin, (2004) (*business strategy, operational strategy, IT strategy, marketing strategy, human resource strategy, financial strategy, and technology strategy*), they largely ignored the practice side of strategy research. There remains limited focus within the existing body of knowledge pertaining to practice-focused strategic decision making for construction firms, most notably for construction PSF's, providing further rationale to the direction of this inquiry.

Murphy (2013), taking the road less travelled, explored the strategy process in QS firms in construction, breaking from the previous emphasis on operational and IT strategies by earlier authors. The study investigated the strategic planning process within Irish CPSFs, highlighting that formality and the existence of a written plan were highly similar with that obtained in large practices, while an informal process is undertaken in practices without a written strategic plan. Tansey et al. (2014) also investigated the response strategies adopted by Irish construction firms during the 2008 economic recession, linking them to Porter's generic strategies, however, as noted, concentrated on contractor organisations. There remains a greater emphasis on project management studies carried out in construction, rather than strategic, echoing the views of Chinowsky & Meredith (2000).

Having established the context within which construction PSFs operate (external), the nature, internal dynamics and characteristics of PSFs can now be examined carefully and consequently linked to the decision-making process within them.

4.4 Nature of Construction Professional Service Firms

As evidenced from earlier chapters, the landscape within which PSFs currently operate

within construction in Ireland is one characterised by constant change, increasing complexity and competitive pressure. Construction professional services, including Architectural, Engineering, Quantity surveying and other construction technical services contributed a net value of €151m to construction output as at year-end 2017 alone (CSO, 2019e). For a sector with such significant contribution to national output, it is surprising that the analysis of strategic management in construction PSFs in Ireland only primarily emerged post-2010 (Flemming, 2011; McQuillan, 2013; Murphy, 2013). Since then, only a limited number of cross-sectional studies involving strategy have been conducted, with no known study adopting a multidisciplinary approach to the topic.

Professional service firms have a reputation for delivering a considerable amount of their services by thriving on reputation and repeat business (Brock, 2012). These firms also have solid local links as most of their work is targeted at local clients with very few of them exporting work abroad (Murphy, 2011). With recent environmental changes – such as the rapid developments in information technology, a crippling economic recession that ravaged Ireland and professionalisation of the services sector – the context for globalisation of service firms has been broadened, giving opportunities for medium-sized and large firms to do business across borders in markets such as the UK, Europe, and the Middle East. However, a significant problem is the lack of investigation of the competitive strategies adopted within these firms and in particular, the processes whereby these strategic choices are made.

Knowledge-intensive firms offer services based a high degree of customisation and professional judgement for the execution of their services (Løwendahl, 2007), CPSFs must also make crucial decisions pertaining to their organisational strategy, in spite of having:

“...relatively few business transactions, with highly customised service offerings, process-centric projects, with the need to apply considerable judgment when meeting customer needs” (Rhian et al., 1992, p. 73).

Furthermore, the high frequency of client interaction necessitates an organisational wide understanding (and arguably participation) of the strategic decisions being made. PSFs differ from manufacturing firms in that they provide their clients with sophisticated, knowledge-based expertise (Maister, 1993), rendering highly intangible and customised services (Erramilli & Rao, 1993), which may result in further complexity in the strategic decision making process.

Professional service firms exercise control over their knowledge and networks, and knowledge is their key productive resource, being highly critical to their success in business (Schilling et al., 2012). This is especially relevant to CPSFs, which relies on advanced knowledge and closer engagement with the client, distinguishing them from the traditional contractors and other construction stakeholders.

Despite their highly skilled and knowledge-driven nature, professionals often struggle with keeping pace with technology and updating their skills and knowledge base (Drew, 2003). However, knowledge is a critical asset upon which CPSFs depend, making it surprising to find these firms struggling with knowledge acquisition and repetitive learning (Lewis & Brown, 2012). As members of a professional body, these firms are required to keep up-to-date on trends and happenings in their fields via acquiring knowledge, however, apart from minimum Continuous Professional Development (CPD) requirements, there is limited evidence as to how CPSF's acquire knowledge overall. Furthermore, the motivation for knowledge acquisition and relationship between knowledge acquired and strategic decision-making remains wholly underexplored.

4.5 PSFs and Knowledge Intensity

PSFs fit into the category of firms referred to by Coxe et al. (1987) as “practice-centered businesses,” who develop their reputation and build their advantage through their specialized and complex knowledge-based competencies. Grant (1996) identified that knowledge is a crucial tool for attaining sustained competitive advantage, and having a deep knowledge base enables firms to identify and exploit opportunities swiftly (Shane, 2000). Firms that have knowledge advantage are more likely to experience positive outcomes such as firm growth and profitability due to their knowledge (Sullivan & Marvel, 2011). Knowledge management (KM) itself has been defined as the effective learning processes associated with acquisition, utilisation and distribution of knowledge (either tacit or explicit), which leads to the enhancement of an organisation’s intellectual capital and performance (Jashapara, 2004). The ability to manage knowledge has been linked with improving innovation, business performance and client satisfaction (Graham, 2010).

Von Kutzschenbach & Brønn (2010) postulated that the first phase and most critical phase of knowledge management involves the acquisition of knowledge, with the later phases being the transfer, utilisation and storage of knowledge. The knowledge acquired by PSFs form the basis of their competitiveness (Lowendahl, 2000), and several studies have explored diverse processes such as knowledge creation, dissemination, sharing and storage. Theorists within the RBV and DCV schools of thought argue for knowledge either as a critical resource or dynamic capability that can be leveraged for attaining competitive advantage, but the question remains about how this knowledge is acquired and if there is any link between this and other larger organisational and business phenomena.

Several authors in construction research have shown that knowledge can be used as a strategic asset to maintain competitiveness and create a niche for the firm within a sector of activity (Bergeron and Raymond, 1992; Egbu, Hari & Renukappa, 2005), but there is limited evidence on “how” this knowledge is acquired as part of the decision making process.

A considerable amount of knowledge within PSFs results from belonging to a certain class (community of practice in this case). Studies in strategy such as Raisch et al. (2009) and Eriksson (2013) takes into account the role that belonging to these communities of practice play, but they do not explain how acquisition is achieved. The process through which AES firms acquire this new knowledge and harness it for competitiveness is therefore worthy of investigation and this is further explored in detail in subsequent sections.

4.5.1 Knowledge Acquisition in Construction PSFs: Deliberate or Contagion-Driven

A major issue in the strategic decision-making process in CPSFs is the ambiguity that trails what exactly constitutes the knowledge base of a PSF, and how firms should use this knowledge for attaining competitive advantage (Alvesson, 2001; Faulconbridge, 2015). Perhaps more problematic is the ambiguity surrounding what PSFs deliver in terms of knowledge to their clients (Empson, 2001; Løwendahl 2005). Pryke (2012) proposed that more studies should address this gap by investigating the construction sector as a social network; however, there remains limited empirical studies into knowledge and strategy nexus in CPSFs, particularly with consideration for people-related factors and their positioning concerning knowledge in practice. It is still not clear whether managers of strategy in construction plan their knowledge acquisition processes or knowledge acquisition “simply happens”.

Establishing a nexus between the established field of knowledge acquisition and the evolving view of strategic decision-making in construction PSFs may be usefully understood as two sides of the same coin, which are not necessarily given proportionate attention. On the one hand, the link between strategy and knowledge management is well grounded within the existing body of knowledge in construction (see Carrillo et al., 2000; Egbu, 2006). On the other hand, there remains the much less investigated area of knowledge acquisition and strategy, which is explored in this study. In addition, knowledge management deals with exploiting, or transforming knowledge into an asset that can then put to organisational use to facilitate continuous improvement (Robinson et al., 2005), while knowledge acquisition involves the collection, analysis, structuring and validation of knowledge for strategic use (Hua, 2008). These concepts are valid for strategic decision-making, knowledge acquisition is more relevant at the formulation stage, which is the emphasis of the current study (Bolisani & Scarso, 2015). The question lingers: is knowledge acquisition within construction PSFs planned or emergent? This is explained in detail.

4.5.2 Social Contagion and Learning in Construction PSF's

Although primarily researched in the medical and marketing field, the contagion concept is currently lacking a conceptual framework or organising principle within construction management research. Burkhardt (1994) distinguished between two types of contagion effect: contagion by cohesion and contagion by structural equivalence. Contagion by cohesion refers to the influence of those who had direct communication (Sundararajan et al., 2010) and occurs among professionals in the workplace, colleagues, associates or those with whom the construction professional collaborates with closely on projects. The other form of contagion is by structural equivalence, which refers to influence exerted by

people with which one has similar communication patterns (Sundararajan et al., 2010). This form of contagion is more widespread and develops from communication or learning patterns. Researchers within the construction domain have not treated social contagion in knowledge acquisition in much detail, as previous studies have not dealt with contagion research, due to over focus on knowledge management above knowledge acquisition.

Grudz (2010) highlighted a correlation between social contagion and the capacity to innovate for an individual, linking it with the contagion by structural equivalence as put forward by Burt (1987). These ties in with the context of construction PSF's in that they are required by law to belong to Communities of Practice (CoP). These communities of practice serve as communication networks that expose people, groups, and organisations to information, attitudinal messages and the behaviours of others (Burt, 1980, 1987; Contractor & Eisenberg, 1990). Consequently, this exposure is expected to increase the likelihood that network members will develop assumptions, knowledge, and attitudes similar to those of their networks (Carley & Kaufer, 1993). Erickson (1988) also affirms that other factors such as frequency of interaction, multiplexity, the strength of association, and asymmetry are other vital points that shape the effect that social contagion exerts on the influence of individuals in within a given network.

In the context of this inquiry, one of the most unambiguous and most inclusive definitions of social contagion, as proposed by The Handbook of Social Psychology (Lindzey and Aronsson, 1985), is used. They define social contagion as the spread of effect or behaviour from one crowd participant to another, where one individual serves as the stimulus for the imitative actions of another. This definition is related to the "herding" effect or "cat herding" as put forward by Løwendahl (2000) as seen in knowledge acquisition in PSFs. This definition focuses on the contagion phenomenon observable in

construction circles, where professionals often acquire knowledge based on industry networks or communities of practice (Love et al., 2011). Using evidence from Wenger (2000), Love et al. (2011) suggested that knowledge acquisition is enhanced via situated practice, whose sense of purpose, collective identity, and place is vital in the context of construction. This implies that the desire for knowledge among construction PSF's may be driven by association with professional membership or communities of practice.

The effect of communities of practice and professional associations on knowledge acquisition is further explored.

4.5.3 Professional Associations/Communities of Practice (CoP)

Davis and Welton (1991) highlighted the need for professionals to be regulated for adherence to professional ethics and ethical behaviour, and ethics is a critical issue for professionals in construction. Professional ethics are influenced by current economic, social, legal, and political trends, and (Frankel, 1989) asserts that these events have had a profound effect on the behaviour and performance of professionals, as well as public expectations. In construction PSF's, professional bodies and communities of practice play a significant role in knowledge acquisition. Networks professionals belong to include internal firms' networks (members of design team/consultants may show similar knowledge acquisition patterns) or external networks (communities of practice, industry networks, national frameworks). Rouleau (2015) espoused that these interactions, particularly on the part of managers with their networks (whether internal or external), have an effect on overall strategy. Consequently, how these interactions occur and its effect on strategy must be carefully considered.

In Ireland, the Royal Institute of Architects Ireland (RIAI), Association of Consulting Engineers Ireland (ACEI) and the Society of Chartered Surveyors Ireland (SCSI) are the

primary professional associations for construction professionals in the AES sector. Belonging to a professional body is one of the intrinsic distinguishing factors for professionals, and as Greenwood (1957) highlighted that being sanctioned by a community, governed by an ethical code and exhibiting a professional culture forms the systematic foundation and authority of professions. Professionalism and belonging to a professional body will direct the identities and ethical conduct of PSFs, influencing their culture and service delivery via standardisation. There appears to be no empirically supported study within construction about how belonging to professional associations affect the learning process and importance of knowledge acquired in professionals.

Von Nordenflycht (2010)'s suggestion that the uniqueness of professional employees is in the external regulation and control exercised by this body of knowledge (otherwise known as communities of practice) is a two-sided discourse. On one side, these professional bodies may be involved in curating learning content and application. On the other hand, they run the risk of becoming 'knowledge monopolies' or 'professional cartels', gaining sequestered control on practice and knowledge streams within in a geographical location, and perhaps stifling innovation. For instance, a Quantity Surveyor cannot practise as chartered QS in Ireland except with membership of the Society of Chartered Surveyors Ireland (SCSI, 2019). Therefore, while professionalisation has its merits, it holds the potential to stifle innovation and encourage groupthink (Seriki & Murphy, 2018).

Another key driving force for knowledge acquisition in CPSFs is technology, and Webster (2002) opened the debate around the rise of informational capitalism, which has led to increasing amounts of knowledge driving the production process around the globe. However, construction PSFs in Ireland have not taken stock to-date of how they acquire

this critical resource, neither have they explored the role that belonging to professional bodies such as the SCSI, ACEI and RIAI plays in their overall knowledge base. This attribute in the knowledge acquisition process is investigated as part of this work.

Professional associations or communities of practice also mandate members to adhere to implicit norms and explicit codes of ethics that guide appropriate 'professional' behaviour (Handley et al., 2006), with the possibility for any knowledge that does not fall within the domain of these associations considered inappropriate or non-standard. Some researchers in strategy of PSFs argue that the external 'controls' put in place by these associations can act to reduce the requirements for, and associated costs of, internal service quality monitoring (Goodale et al., 2008), but the same may be detrimental for individual innovation and creativity.

With calls from the Farmer report (2016) and World Economic Forum report (2016) for the construction industry to rethink its approach to skills development, the dynamics of knowledge acquisition and its link with strategic decision-making in construction PSFs is needed. Are communities of practice (-including professional bodies) in construction gatekeepers of knowledge or catalysts for strategic change? These questions are answered in due course within this study.

4.6 Summary

This chapter explored PSFs, particularly AES firms in construction, who usually work together in the interest of the client on a project-level, yet may select different strategic options and are led by different types of strategists. This chapter has explored the uniqueness of PSFs, who in the light of recent calls for increased collaboration and cross-fertilisation of knowledge, are required to work together on construction projects, while adopting different competitive strategic choices. A key gap in knowledge identified in

the chapter is concerning a lack of clear understanding of the multi-disciplinary strategic decision-making process across all three professions (AES), and the impact of social contagion on the acquisition of knowledge for decision-making. As firms within the industry are being encouraged to collaborate more, despite having different strategic goals, and with CPSFs differing from contracting or manufacturing firms, this chapter highlighted the uniqueness of the PSFs and its strategic management process. The question of professional bodies and their influences on the knowledge acquisition process which impacts strategy was also asked. Questions around whether the knowledge acquisition process is deliberate or influenced by social contagion were also asked, and an argument for adopting a social contagion view of knowledge acquisition proffered.

This chapter also explored how the centrality of knowledge to PSFs, as it would be illogical to investigate strategy within these firms without giving due consideration to knowledge which is their primary competitive resource. Also, understanding the alignment between knowledge acquisition and strategy could potentially provide the firm with a competitive advantage. Identifying potential similarities between the knowledge-intensive nature of CPSFs and how this impacts the overall decision-making process is critical to the understanding of the strategy process in these firms.

5. SYNOPSIS OF LITERATURE

5.1 Introduction

The literature review provided an important opportunity to advance the understanding and bring together three distinct areas for scrutiny, namely the construction industry, strategic management and professional service firms. Echoing the position of Cheah & Chew (2005) about most construction firms downplaying strategic thinking due to project-centrism, the review highlighted that academic inquiry into the strategic management of construction professional service firms remains underexplored.

The review also clearly demonstrates the complexity of the construction sector, its multifaceted composition and the ongoing under-investigation of the strategic decision making process across construction firms, but in particular construction professional service firms.

In 2011, Murphy demonstrated that knowledge of the strategy process in CPSFs was limited, and since then, no follow-up study has been conducted neither has any researcher taken on her recommendations for cross-professional analysis in the industry.

This is the first time that a holistic investigation has been proposed into CPSFs, and most importantly the first cross professional analysis of strategic decision-making processes across all three key professions in Ireland (AES). The conclusions of Murphy (2011) advocating for further in-depth, cross-professional study on the strategy process in the multi-faceted, multi-profession industry is addressed in this research.

An overview of the gaps identified in the literature review and how the gaps will be addressed in the context of this research is presented in Figure 12.

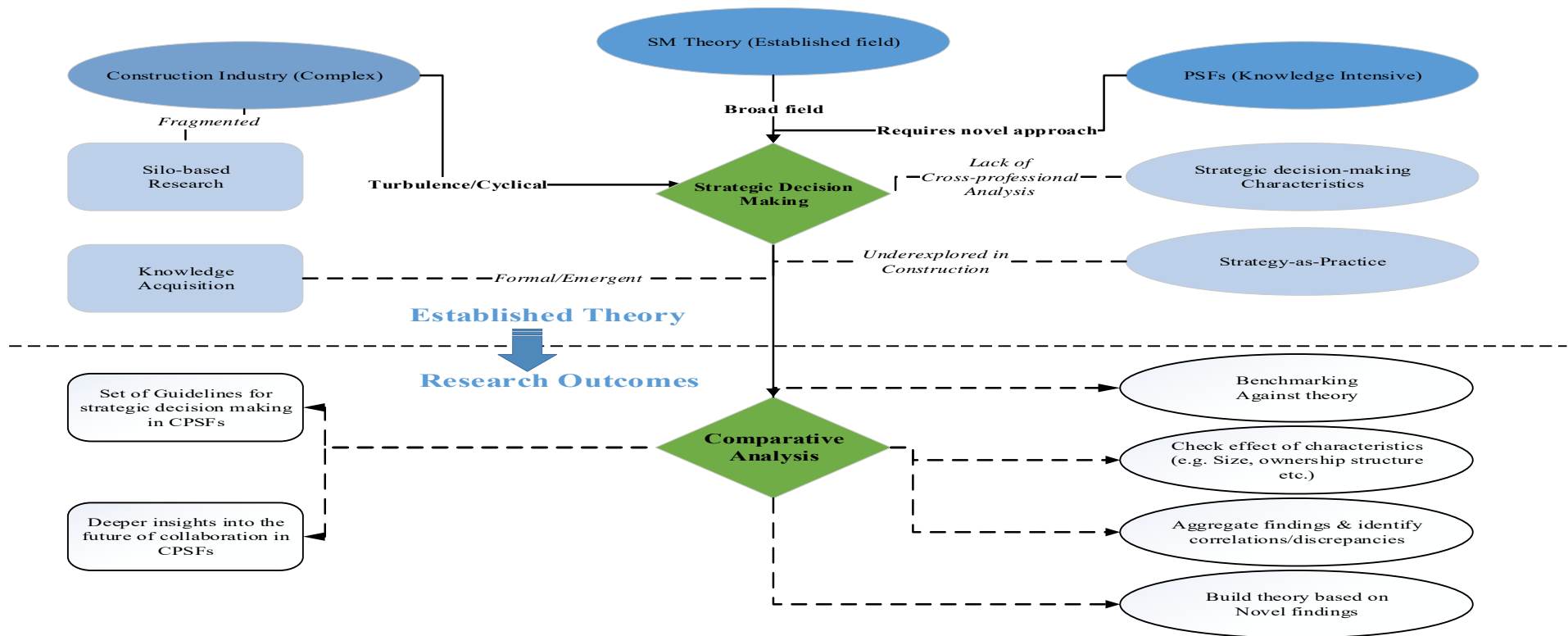


Figure 12 Overview of the entire literature review

5.2. Merging Three Strands of Investigation

The preceding literature review has established the importance of studying the strategic decision making process for competitiveness, linking it to the high knowledge intensity of construction PSFs, and the significance of the construction industry to the economy as a whole. The literature also demonstrates the multi-faceted nature of strategic decision-making within construction, the highly fragmented nature of interaction between stakeholders and the calls for increased collaboration between firms in the sector. Consequently, investigating strategic decision making across firms in the industry is both challenging and complex, requiring custom methodology and approaches.

The three key strands in the literature review are outlined thus:

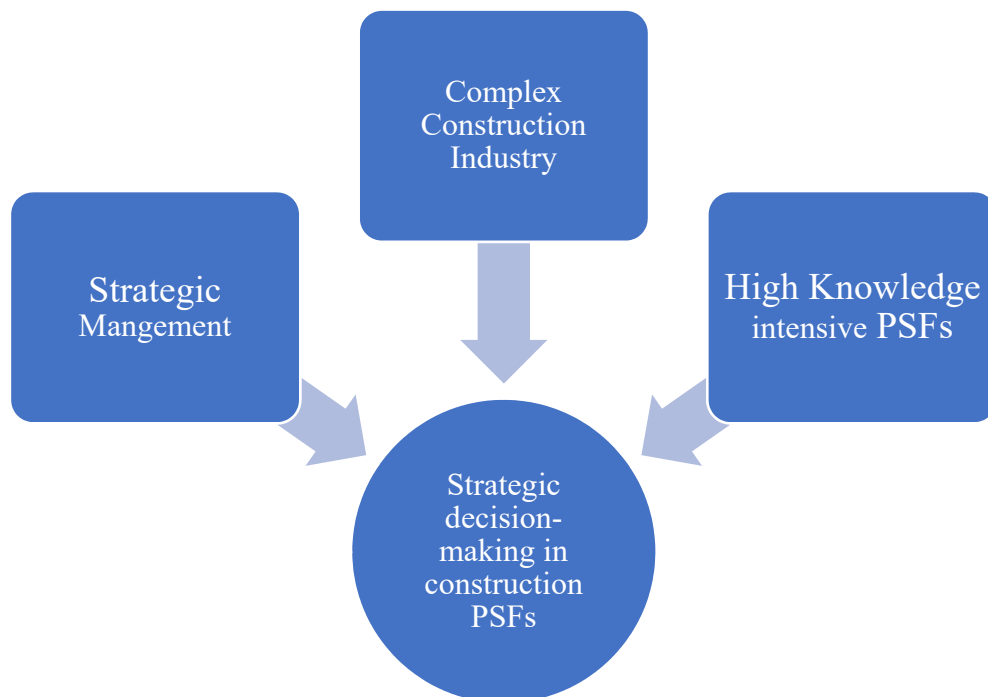


Figure 13 Merging three strands of investigation

Individual components of strategic decision-making process/practices under scrutiny in the research and the theoretical underpinning are outlined in Table 5.

Table 5 Strategic Decision-making process characteristics/practices and relevant author(s)

Theme	Characteristics	Key Authors
Formality of planning	Written/Informal	O'Regan & Ghobadian (2002)
Approach to strategy	Planned, Emergent, Resource-driven, Technology-driven	Mintzberg and Lampel (1999); Brews and Hunt (1999)
Strategic type	Prospectors, Analysers, Defenders, Reactors	Miles and Snow (1978)
Risk Attitude	Maximisers & Managers (Risk seeking), Conservators & Pragmatists(Risk-averse)	Barid and Thomas (1990); Hillson et al. (2004); Ingram and Thompson (2012)
Planning Horizon	Annual, Biennial, Ad-hoc(on-demand)	Harrison (1995); Stonehouse and Pemberton (2002); Alogan & Yet[dot]s, (2006).
Strategic Decision-making dimensions	Internal: Flow/Participation; Repeat Business; Internal reviews; Investments in R & D; investment in staff training and development; and employment of external consultants	Maister (2003); Awuah (2007); Perrott (2011); Preece et al. (2016); Úbeda-García et al. (2014); Aldehayyat (2011).
	Evaluation: Strategy tools; Communications; numerical target setting.	Naaranoja, Haapalainen & Lonka, (2007); Ocasio & Joseph (2008); Oyewobi & Windapo (2015).
	External: Competitor Analysis; Industry analysis; Economic analysis	Chen (1996); Alsem (2019); Eisenhardt (1989); Grant (2003); Murphy (2011); Tansey (2018).
Strategic Choice	Corporate strategy, Business Strategy.	Porter (1980); Robbins & Coulter, 2012)
Knowledge Acquisition	People, Process, Technology	Alvesson (2001), Faulconbridge (2015); Løwendahl (2005)
Strategy-as-Practice	Practitioners, Practices, Praxis	Johnson et al. (2003); Jarzabkowski and Spee (2009).

The key theoretical foundation of this study is located at the centre of strategy process and practice views, as the study is positioned in exploring various processes and routines that CPFSS have developed in reaching strategic decisions within their businesses. These routines (decision-making routines in this case) are considered the fundamental unit of analysis in the study (cf. Nelson and Winter, 1982). The presence of these routines (or their absence thereof) are important to determining likelihood of survival in the long run,

however the relationship between strategy and firm performance remains outside the scope of the current study.

Barney (2001) posited that focusing on routines would eliminate the need to adopt alternative strategy-conduct-performance lenses. This emphasis on how routines or processes as opposed to conduct-performance or market-forces drivers (neo-classical economic views) align is the overarching stance of the study.

5.3 Gaps in the Existing Knowledge Base

The preceding review of literature has highlighted five (5) critical gaps requiring further investigation namely:

1. **Dearth of research into strategic decision-making in PSFs:** This gap is related to the dearth of research linking the strategy processes in construction PSFs to established theories in academic literature. Within the Irish context, only a small number of studies have explored strategy processes in CPSFs, and there is a clear need for a rigorous study exploring critical aspects of the decision-making process such as the choices selected and the characteristics of the process.
2. **Current strategy studies in Ireland are dated:** A paucity of studies examining strategy in construction PSFs in Ireland is clearly apparent. Murphy (2011), Flemming (2011) and McQuillan (2013) research into QS and Architectural firms are now dated, and the industry has changed significantly in the decade since these studies were undertaken. Therefore, a need has arisen to gain fresh insights into how these firms formulate their strategy, particularly as it influences the strategic decision-making process across individual PSFs. This is the first study that explores strategic decision-making in construction in Ireland, since the return to growth after the lengthy

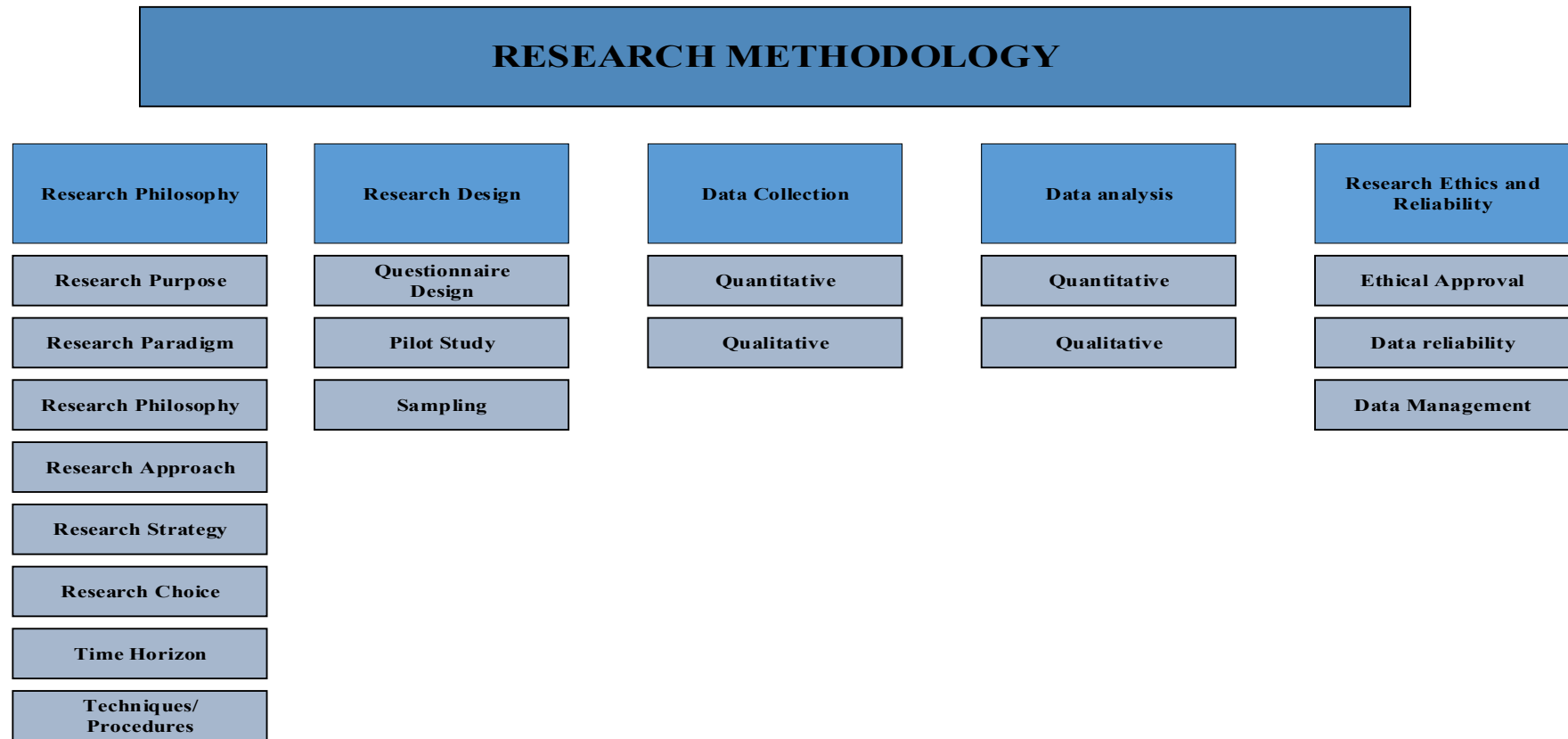
and severe period of economic recession.

3. **Lack of comparative analysis:** Luo, Sun & Wang (2011) highlighted the lack of comparative studies across management research. Strategy research in construction is often silo-based research, especially within the Irish construction industry (see Murphy, 2011; Flemming, 2011). By adopting a comparative analysis, the study enables insights into the full picture of the sector in which these firms operate. The cross-professional analysis allows for gaining insight into the multidisciplinary nature of the industry and the uniqueness or similarities in the strategy processes. As has been noted, there remains limited cross professional empirical investigation of the strategic decision-making processes across the three key professions within construction in Ireland (i.e. AES firms). Therefore, this study seeks to bridge the apparent gap in knowledge by investigating strategic decision making across multiple disciplines, focusing on AES practices.
4. **Lack of SAP studies in construction, particularly PSFs:** The fourth gap concerns the strategy-as-practice (SAP) perspective, which remains unexplored within a construction context. Having established that PSFs are knowledge intensive, and their business interactions are mainly intangible, there is a need to explore strategy not as something the firms have, but as what they do. This view of strategy, often referred to as SAP view, is lacking within construction PSFs studies, and has never been applied to the study of CPSFs within wider strategy studies. Hence, this is the first study to apply the SAP view to the analysis of strategic decision-making within CPSFs in Ireland.
5. **Absence of unifying framework for strategic decision-making in CPSFs:** The final gap addresses the lack of a unifying framework or guideline for CPSFs seeking

to formulate strategy or engage in strategic decision-making. While several frameworks exist addressing strategy formulation, there have only been attempts by researchers to present normative models, having some desirable attributes of what a good strategy should possess (Hax & Majluf, 1986) without stating the process involved. Strategy research in construction therefore, still lacks as a unifying empirical framework for strategic decision-making within construction PSFs. In addition, there is an evident need for a framework which does not focus on causality or correlation (Pryke, 2004a; 2012), but presents an alternative to the popular mathematical/statistical frameworks as presented in the works of popular strategy researchers in construction (Akintoye et al., 2000; Anikeeff & Sriram, 2008; Lu, 2010; Pamulu, 2010; Loosemore, 2016). This framework must be one that will not focus overtly on correlation or causality, but seeks to identify or “make sense” of the practice of strategy (Rouleau, 2013).

The gaps highlighted above are investigated in this exploratory study, the foundations of which are based upon three pillars *strategic decision-making, complex construction sector and knowledge intensity considerations in CPSFs*. The process involved in strategic decision-making and the link between these activities and larger organisational, business and societal phenomena is investigated. In order to achieve the research objectives and to fill the gaps in knowledge identified in this chapter, a tried and tested methodology must be adopted. The choice of methodology, the approach taken to the study, and other research method considerations are explained in the next chapter.

PART III: RESEARCH DESIGN AND METHODOLOGY



6. RESEARCH METHODOLOGY

6.1 Introduction

The preceding chapters provided a comprehensive analysis of the theoretical foundations of the field of strategic decision-making within construction professional service firms. Significant gaps in knowledge have been identified concerning the process of decision-making in CPSFs, specifically in Ireland. This chapter outlines the methodology employed in the investigation to fill the four identified gaps in knowledge and to address the stated research question, aims and objectives. The purpose of this chapter is to:

- outline the research philosophy adopted in relation to other philosophies;
- expound the research strategy, exploring the alternatives foregone and subsequent methodologies adopted;
- explore the rationale for the choice of research design;
- introduce the research instruments developed to answer the research question (s)

The method of data collection, unit of the analysis, sampling techniques and pilot survey, including proposed methods of data analysis, are also discussed. Finally, the ethical considerations are examined, outlining how the inquiry adhered to best practices of data protection and data handling during the study.

6.2 Restating The Research Question, Aim and Objectives

The research questions, aims, and objectives are restated here again for ease of navigation through the document. The main research question of the study was:

"What are the strategic decision-making processes deployed in high knowledge-intensive professional service firms within the construction market in Ireland?"

The research aim helps to add further clarity to the question above and is stated as follows:

To determine the strategy process/practices within Irish construction professional service firms (CPSF's) and to explore the extent of convergence/divergence across professions.

In order to achieve the stated aim, a number of objectives have been identified as follows:

1. to ascertain the characteristics of the strategy processes in Architectural, Engineering and Surveying (AES) firms in Ireland.
2. to identify the extent of convergence or divergence in the strategy process across AES firms in Ireland.
3. to conduct a cross-professional analysis of strategy processes in the three professions, identifying similarities and dissimilarities between them.
4. to apply the emerging strategy-as-practice approach to CPSFs [exploring the practitioners, practice and praxis strands of strategy within these firms]
5. to develop a framework for construction practitioners to adopt in the strategy formulation process, specific to construction PSFs.

These objectives position the study between different disciplines (construction & strategy), and the philosophical considerations in are now discussed in the next section.

6.3 Research Philosophy and Methods

Under this theme, the question of how the research was conducted, the approach to the study, its philosophical considerations and methodological choices are outlined. This

study lays out different philosophical and methodological assumptions across construction and strategy research and explains the rationale for selecting those adopted in the study.

6.3.1 Research Purpose

This section of the research methodology asks "why" the study is being conducted, or the goal of the study. Kumar (2005) also expounded four research purpose classifications namely: descriptive, correlational, explanatory, and exploratory. These four classifications are expounded in Table 6.

Table 6 Research Purpose

Research Purpose	Explanation
Exploratory	Aimed at discovering " <i>what is happening</i> " and " <i>to seek new insights</i> " without investigating reasons (Robson, 2002). This approach examines the subject under consideration to understand the potential outcomes and opportunities for engaging new approaches.
Explanatory	Seeks to clarify why and how there is a relationship between findings within a situation/occurrence. This method seeks to build causal relationships, i.e. explores causality.
Correlational	Seeks to uncover or establish the occurrence of a relationship/association between two or more areas of a particular study/topic.
Descriptive	Seeks to proffer a description of a situation, event or phenomenon, usually providing attitudes towards a topic/issue or to portray an accurate picture of persons, events or situations" (Robson, 2002).

From the options listed in Table 6, this study falls under the exploratory research stream, as it seeks to gain new insights into the strategy process in CPSFs. Next, it is important to identify the frame of reference, which was adopted to the methodological choices. The research methodology provides a road map, which highlights the rules and postulates methods used for exposing the study to analysis, critique, replication, repetition, or adaptation, and enables them to choose an appropriate research method (Given 2008). There needs to be justification for the research methodology and techniques proposed by

any given academic research in achieving the aim of the study. Bell (2005) outlines that there is no standard methodology that can be applied to all research problems, but recommends for the methodology to be selected based on the type of data readily available and the nature and scope of the topic at hand. Thus, this study adopts a custom methodological frame to suit the research scope.

Construction management is a diverse field of study, encompassing a wide range of disciplines such as natural sciences, management, as well as social sciences and engineering, to provide context depending on its requirements (Dainty, 2008; Fellows & Liu, 2008). Amaratunga et al. (2002) have postulated that there is no one-size-fits-all paradigm to research the construction management practice, but it is about finding a midpoint to use as a benchmark. Oyewobi (2014) added that each research approach has its inherent advantages and disadvantages, choosing the approach to be employed in any research dependent on three factors namely: *the nature of the research question to be addressed, the type of data to be gathered, and the conclusions to be drawn.*

One of the key models used to explain the research methodology is the **Research onion** diagram based on Saunders et al (2009). The research onion is the preferred frame of analysis for the study as it explains the researcher's understandings and associated decisions with regard to the context and boundaries of data collection techniques, processing of data and analysis procedures (Sahay, 2016). The research onion also enables the researcher in deciding whether to use quantitative method or methods, a qualitative method or methods, or a mixture of both (Saunders & Tosey, 2012).

An outline of the research onion proposed by Saunders et al. (2009) is shown in Figure 14 below.

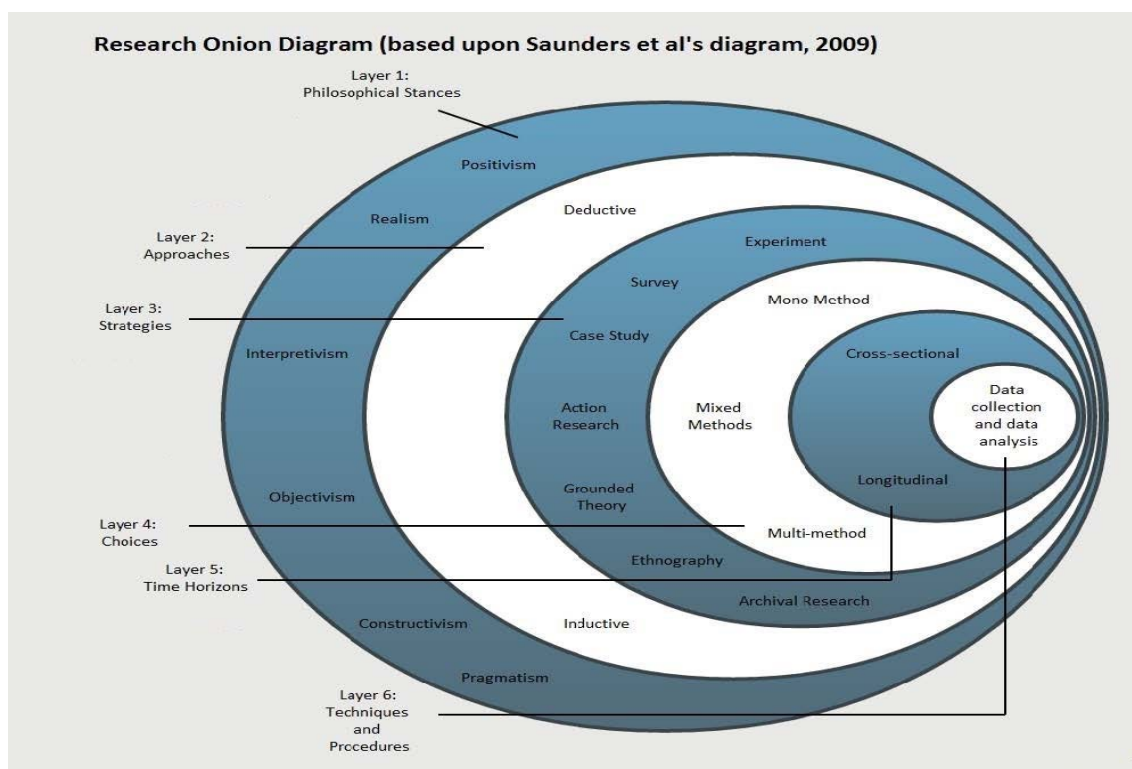


Figure 14 Research Onion (based on Saunders et al., 2009)

In the next sections, some of the philosophical assumptions adopted in the study will be discussed, as well as the six (6) layers of the research onion pictured in Figure 14 will now be analysed in detail in the subsequent sections.

6.3.2 Ontological, epistemological and axiological assumptions

Saunders et al. (2009) presented three philosophical assumptions for research design within management studies. These are the ontological, epistemological and axiological assumptions, and these define the way in which data is collected to answer the research question(s) and the techniques needed to collect them. Crotty (1998) explains that these assumptions need to understand in order to explain the choice of methodology and why the research should be taken seriously. These three assumptions are now considered in detail.

Ontological assumptions: Ontology is mainly concerned with the ‘nature of being’ (Holt & Goulding, 2017), particularly those ‘real’ aspects of organisations are those that impact on organisational practices (Saunders et al., 2009). Ontology also deal with the physical, technical or social supports on which and in which knowledge is created (Akerhurst et al., 2011). Within this study, the ontological position explores the researcher’s view of the nature of reality e.g. what exists and how can it be reliably measured? (Holt & Goulding, 2017). The ontological assumptions shapes how the researcher sees the world and the research subject, particularly the organisations, management, individuals’ working in them and artefacts.

Questions asked under the ontological assumptions includes the following: ‘What are professional service firms like?’ ‘What is it like being a professional or strategist?’ ‘What is it like being a manager or being managed within PSFs?’

Epistemological assumption: This concerns assumptions about knowledge; especially what constitutes satisfactory, authentic and valid knowledge, and how this knowledge can be communicated to others (Burrell and Morgan 1979). This assumption also considers the researcher’s view of what represents knowledge and how this relates to the research itself. The questions asked under this assumption is ‘what is known’ or ‘can be known’ about the research problem. Saunders et al. (2009) espoused that epistemological assumptions are obviously more relevant than ontological ones in business and management research, due to the multidisciplinary nature of knowledge in the sector.

The type of data produced in business and management research (from numerical data to textual/visual data) can all be considered legitimate. As a result, there are diverse epistemologies available to researchers in the business and management domain, giving

greater flexibility to the number of acceptable epistemologies and choice of methods than other academic disciplines. The epistemological assumption will govern what the researcher considers legitimate for the research, particularly what can be done successfully in relation to knowledge.

Axiological assumptions: This assumption considers how research shapes and is shaped by researcher's beliefs, doubts and values (Saunders et al., 2009). Subedi (2016) explains that the axiology includes assumptions about value and ethics, and how the researcher interfaces with the issues of regulation and ethics in the study. One of the key influences of axiological assumptions is that it explicates how the researcher's values affect the selection of method, participants, data collection, analysis and interpretation influence the research process, if its results is to be deemed credible.

The argument that values are the guiding reason for all human action was first put forward by Heron (1996), explaining that axiological skills are displayed by researchers who are able to articulate their values, while making judgments within their research. This also affects the choice of what part of the research is considered more important, as well as the choice of data collection techniques.

Being clear about the axiological position also helps the researcher to clarify what is ethically appropriate and in explaining this in the event of queries about decisions (Saunders et al., 2015). The assumptions outlined here will be linked in with the major philosophies in management research, as well as the layers of the research onion pictured in Figure 14.

6.3.3 Research Philosophy

Saunders et al. (2009) put forward six (6) philosophical stances namely: *Positivism*,

Realism, Interpretivism, Objectivism, Constructivism and Pragmatism. Out of these six philosophical stances in Table 6 above, Love et al. (2002) identified the interpretivist and positivist as the most predominant worldviews in a review of construction management research. Dainty (2008) also found in a review of 107 research papers published in volume 24 of the journal *Construction Management and Economics*, that circa 8.5% adopted the interpretivist worldview, 11% employed the pragmatic worldview, and an overwhelming 71% of authors adopted the positivist philosophy, while others reviewed other papers or conducted an alternative study. This further confirms the predominance of positivist studies in construction management related studies. That positivist philosophy is popular and frequently used does not mean it is applicable to every research within the construction management domain, however, a closer look at descriptions of the philosophical stances is required. These are discussed in Table 7 below.

Table 7 Analysis of the Six Philosophical dimensions in the research onion

Research Philosophy	Explanation
Objectivism	This philosophical stance identifies the separate existence of social phenomena, their meanings and social actors. An example of social phenomena could be barriers to entry to the industry, while actors are firms waiting to enter it. Barriers to entry in markets exist, it is real and would be acknowledged by firms to exist and is therefore independent to the firms who face restrictions from the market due to it
Constructivism	The Constructivist philosophical argument is the opposite of objectivism. This standpoint considers social phenomena to be constructed by social actors. Thus, if a researcher holds a constructive worldview, s/he would believe that, for example, a new law is the result of the actions of the group of people it now has an impact on.
Positivism	The positivist philosophy generates hypotheses (or research questions) that can be tested and allows explanations that are measured against accepted knowledge of the world we live in. This philosophical stance creates a body of research that can be replicated by other researchers to generate the same results; however, its focus is on quantifiable results, often resulting in statistical analysis.
Realism	The focus of realism is similar to positivism in its assertion that social reality and the researcher are independent of each other and so will not create biased results. However, the point of difference is that realism thinks that scientific methods are not perfect; therefore theory is subjective and can be revised and that our ability to

	know reality, without doubt, may not exist without continually researching and leaving our minds open to using new methods of research. Realism usually adopts several types of research methods to triangulate results in the search for a more reliable outcome.
Interpretivism	The interpretivist philosophy emphasises the meaningful nature of people's participation in social and cultural life. Researchers adopting this worldview analyse the meanings people confer on their own and others' actions and take the view that cultural existence and change can be understood by studying what people think about, their ideas, and the meanings that are important to them.
Pragmatism	The central argument of pragmatism is that both constructivism and objectivism are valid ways to approach research. This worldview allows a researcher to view the topic from either or both points-of-view regarding the influence or role of social actors and uses these to create a practical approach to research. This worldview is usually adopted in finding solutions to problems.

Drawing on conclusions by Dainty (2008), the positivist approach was the most adopted worldview within that volume of research (critical as this was the peak year within construction), and since positivism involves mathematical hypothesis testing (see Table 7), there might be justification for it being the preferred philosophical stance for social scientists. However, Dainty (2008) also noted that none of the methodologies on its own could give the entire range of what construction management research requires. Oyewobi (2014) also affirmed this by suggesting that multi-philosophical research design should be adopted to provide better understanding of the complexity that characterised the construction industry.

The argument for a multi-philosophical approach has its advantages and drawbacks, and some arguments can be made for supporting a singular philosophy or a mix of two. Previous strategy studies in construction have based their criteria for selection of worldviews using different arguments. An example is Aaltonen (2007), who adopted an objectivist worldview to strategy research in construction, citing that construction needs to be viewed on a realistic ontological basis that assumes an apprehendable, coherent reality to exist, regardless of an observer and his conceptions of it 'out there' in the world

(based on the position of Burrell & Morgan, 1979). Adapting this philosophical stance to this study is faulty due to the Aaltonen's (2007) presupposition that the researcher and the topic under consideration are independent entities, the former obtaining information from the latter. This kind of ontological stance may be valid in the work cited, seeing that it involved research across several sectors including finance, healthcare, retailer and telecoms sector. However, in this study which is focused solely on construction (a highly turbulent and competitive business environment), the objectivist approach proves inadequate.

The constructivist worldview is also lacking, as it focuses on the complex world of lived experiences and situation-specific meanings, using perspectives from social actors who live and construct it (Graham, 2010). The constructivist worldview is also not suited to this study as the worldview has been criticised as explaining subjective realities (Morris, 2006). This philosophical stance asserts that multiple meanings exist based on the individuals exploring them, and these meanings are shaped by their interaction with others and the historical and cultural norms that surround them (Creswell, 2007). However, in this study, the researcher is purely independent of the study and will not seek multiple abstract meanings from the study of decision-making process. Thus, the constructivist worldview is not suited for the analysis of the current topic or to meet its objectives.

The pragmatic worldview, however, stresses the connection between truth and action and contends that the decisive proof of beliefs is readiness to act on it (Fendt et al., 2008). It argues that both constructivism and objectivism are valid ways to approach research, allowing a researcher to view the topic from both points-of-view (i.e. constructivist and

objectivist) and using these to create a practical approach to research.

Ontologically, this study will take the complex, robust field of strategy and link it in with the construction sector (which is the reality of the industry being explored), seeking to explore the practical consequences of how decision-making takes place. Saunders et al. (2015) also states that when undertaking a pragmatic philosophical worldview, the researcher should explore processes, experiences and practices, which strongly aligns with the objectives of the study at hand.

The main epistemological assumptions in the study is also well aligned with the pragmatic worldview, as this study explores the practical meaning of knowledge in specific contexts (i.e. construction sector in Ireland), using ‘true’ theories and knowledge that lead to successful action (Saunders et. al, 2015). Fendt et al. (2008) further stated that the pragmatic school of thought emphasises the fusion of action and knowledge, without treating any of these components as being mutually exclusive. This agrees with the position of Tashakkori and Teddlie (1998) who posit that pragmatism entails clarity and stokes sensible interest in research, distinguishing it from other philosophical debates that have been engaged in over the years, hence creating clarity in terms of the epistemological assumptions. Brooks et al. (2016) also add that pragmatism involves the selection of the most appropriate conceptual and research tool based on ‘what works’ in answering a particular research question. This worldview lies aligns with objectives of the study, and has been used in several strategy investigation studies (e.g. Gajendran et al., 2011; Oyewobi, 2014), justifying its adoption in this study and satisfying Saunders et al. (2015)’ criteria for epistemological assumptions in the pragmatic worldview.

The axiological assumptions in this study are well suited to its pragmatic worldview, as

the researcher's values as an engineer are evident in the study, and all through the literature review, methodological arguments and analysis, a thread of reflexivity occurs outlining how the researcher seeks to provide answers to his own doubts and beliefs. This is also obvious in the research methodology adopted, as the researcher seeks to triangulate and validate the findings by using data from multiple sources (Lu, 2010)

The pragmatic worldview is considered one of the key philosophical foundations for the mixed methods approach, and as Creswell (2003) highlighted, in mixed methods research, pragmatism allows pluralistic approaches to research, different worldviews, and different postulates, as well as different forms of data collection and analysis in a single study. As a result, the pragmatist worldview is adopted in this study.

6.3.4 Research Approach

In research investigations, there are two approaches commonly used: deduction or induction (Alvesson & Sköldbberg, 2009). The first approach, deductive reasoning entails the suggestion of theory and then adapting a research method for testing the theory. This is also known as the "top-down approach" (Trochim and Donnelly, 2008). The inductive approach, however, starts with several single cases and assumes that a pattern that has been observed in all these and accepts it as generally valid (Alvesson & Sköldbberg, 2009). This approach can also be referred to as the 'bottom-up' approach (Trochim and Donnelly, 2008). The focus of the inductive approach is to put less emphasis on generalisation, and instead zeroing in on an observed research phenomenon within its context, adopting a flexible structure to investigation (Easterby-Smith et al., 2002).

Alvesson & Sköldbberg (2009) introduced a third kind of research approach in their seminal work. They explain that although the two well-known models, i.e. inductive and

deductive are usually regarded as exclusive alternatives, it is difficult to force all research into them. They outline that this method, although having characteristics of both induction and deduction, is not just a simple 'mix' of these, but adds new, specific elements. When adopting the abductive approach, the empirical area of study is suggested to be successively developed, and the findings adapted and refined alongside the theory. With its focus on underlying patterns, abduction also differs advantageously from the two popular alternatives, because it offers insights and understanding into the study as well (Alvesson & Sköldberg, 2009). The authors, however, highlight that abduction must be controlled against more cases, i.e. adopted using cross-case analysis. This research inquiry fulfils this criterion as the empirical data observed from the primary profession (architecture) is compared with that across two other professions (engineering and QS firms). Esposito et al. (2007) affirm that abduction is a critical method for analysis in complex and uncertain situations (which applies to construction markets).

Therefore, the abductive approach is the most appropriate suited to the study. The next layer of the research onion (cf. *Figure 14*) namely research strategy is explored in the next section.

6.3.5 Research Strategy

The research strategy explains the approach taken for empirical data collection. The research strategy is usually dependent on the research questions, the extent to which the researcher has control over events surrounding the study and the degree of focus of the study on contemporary events (Yin, 1994). It is recommended to select a strategy that aligns with the subject matter of the research, as defined in the aims and objectives. Saunders et al. (2009) outlined seven research strategies that can be utilised in research,

namely: experiment, survey, case study, action-research, grounded theory, ethnography and archival research. Each strategy is further outlined in Table 8.

Table 8 Pros and Cons of Research strategies

Strategy	Description	Pros	Cons
Experiments	Usually linked with scientific laboratory work or field experiments.	Replicable; ease of use; high precision	Artificial setting, ethical issues; representation of an entire sample
Action research	Termed as ‘Hands on’ research, employing a cyclical process and critical reflection.	Used in tackling practical problems, beneficial to participants,	Ethical issues, scope and scale , impact of research
Case Studies	Spotlight on one/ two instance(s), and allows for In-depth study, with a focus on relationships and processes	Allows multi-source, multi-method analysis	Hard to generalised across the board
Ethnography	Usually a description of peoples cultures and habits	Conducted via direct observation, provides empirical data that can be linked with theory, holistic approach.	Tensions within approach, longitudinal nature, ease of access.
Grounded Theory	Approach seeks to generate theory rather than testing hypothesis	Adaptable, focus on practice, systematic way of analysing data, explanations are grounded in reality,	Precise planning is a problem, open-minded approach required,
Archival research	Storytelling approach where the researcher to study the lives of individuals and asks one or more individuals to provide stories about their lives.	Margin of error is negligible as there can be no change in participant behaviour/response	Zero control about how data was collected as the data is retrospective.
Survey	Conducted using questionnaires, interviews, documents and observation	Empirical data with comprehensive and inclusive coverage	Accuracy and honesty of responses. Ease of quality checking

The selected strategy from Table 8 is the *survey strategy*, as it is well established within construction management studies, and fits within the research objectives of the study. Survey strategy also has proven to be useful for data gathering and analysis (Strauss & Corbin, 2008). Holt & Goulding (2014) also assert that survey instruments such as quantitative surveys, interviews, observation, focus groups and experimentation allow for comprehensive data gathering and detailed analysis. Thus, surveys instruments are considered an appropriate strategy for the research.

As previously stated, all strategies have advantages and drawbacks, and Table 9 below explores the pros and cons of adopting a survey research strategy.

Table 9 Pros and Cons of Survey strategy

Advantages	Disadvantages
<ul style="list-style-type: none"> ▪ Allows for the gathering of empirical data and ease of triangulation of data (Walker, 1997) ▪ Comprehensive and inclusive coverage (Davidson, 2004) ▪ Enables the generalisability of findings (Chenhall, 2003) ▪ Ability to select samples from known populations, and collection of standardised data from each individual (Robson, 1993) 	<ul style="list-style-type: none"> ▪ Sometimes insufficient detail and depth of data. Problems with the accuracy of data gathered ▪ Focus on the data (Holt & Goulding, 2017) ▪ The element of observation appears more distant or problematic (Alvesson & Sköldbberg, 2009)

From the information in Table 9, the benefits of using surveys outweigh the disadvantages; hence, surveys are preferred for this study as it the most relevant to answering the research questions posed by the study (Navarro Sada & Maldonado, 2007). Care was taken to avoid the pitfalls of survey research, as the researcher ensured that data was collected in a representative manner and in sufficient detail.

6.3.6 Research Choice/Method

The research choice of the study is related to the main methodological choice adopted in the study. Saunders et al. (2009) list three different research choices for research studies namely: *mono-method*, *mixed methods*, and *multi-method*. The mono-method research choices include the quantitative and qualitative methods respectively, while mixed-methods entail a combination of the two mono-methods. The mixed methods research choice (comprising quantitative and quantitative research methods) was selected for the study, and the case is made below for its adoption.

6.3.6.1 Quantitative Research Method

Quantitative research is grounded within positivist philosophical themes and deals with observable facts (Oyewobi, 2014). The quantitative research choice is primarily informed by the fundamental ideology that human behaviour can be explained by social facts, which can be investigated using methodologies that embraces the deductive logic of natural sciences (Amaratunga et al., 2002). Positivism usually adopts precise quantitative methods, which usually take the form of experiments or surveys, generating data that is analysed statistically (Neuman, 1997).

Researchers who employ quantitative methods tend towards taking measures (often mathematical), which are then used to develop or strengthen hypotheses, to discern correlations with reality. Oyewobi (2014) argued that findings based on a study sample from quantitative approaches can be assumed to be representative of, and can be generalised to the entire population. This study, therefore, utilises a quantitative survey as the tool for eliciting responses in the first part of the data collection, as well as in generating representative data for the entire study population under study. The quantitative strand is followed by a qualitative strand, which is explained next.

6.3.6.2 Qualitative Research Method

The qualitative research method is also employed in this research due to its strong links with exploratory research. Neuman (1997) propounded that qualitative research methods emphasise the extensive reading and investigation of textual data, which could be in pictorial, reported or conversational format. According to Greener (2011), qualitative research inquiry is grounded in the belief that the external world cannot be accessed directly, but only indirectly through systems that people have made of it. This agrees with

the position of Stiles (2003), who argues that the qualitative research choice (which is mostly interpretivist in nature) involves the idiosyncratic interpretation of available data. Stiles (2003) continues to propose that this interpretation is mostly from the viewpoint that the world is constructed socially from the interpretation of people living in it.

In support of the interpretivist approach, Ardley (2008) also outlined that this philosophical stance takes into cognisance the experience of the individual and the associations between human consciousness and objects existing in the natural world. Rouse and Daellenbach (2002) also employed qualitative tools in unravelling the nature and sources of competitive advantages in the firms under consideration in their study. Oyewobi (2014) however, noted that organisational strategies and characteristics might not be investigated entirely using rationalist methodologies alone, due to the risk of confining the researcher to simplistic, ‘unproblematic’ observations, or phenomena that are already known. Thus, a combination of both methods may be explored in dealing with the study at hand.

6.3.5.3 Making the Case for Mixed Methods

The mixed methods research choice involves combining quantitative and qualitative data and is becoming increasingly popular across disciplines, as many researchers perceive this approach as the optimal way to address research problems in the social sciences (Johnson, Onwuegbuzie & Turner, 2007; Molina-Azorin, 2012). The chosen method encompasses both quantitative and qualitative areas of research, including the paradigms, philosophical assumptions and theoretical perspectives (Christ, 2009) pertaining to each to ensure the totality of phases rather than just the methods as suggested by Oyewobi (2014). Saunders, Lewis & Thornhill, (2015) also argue that mixed methods is the most

suiting to the pragmatism as it follows the research problem and research question, adopts a wider range of methods and emphasises practical solutions and outcomes.

Mixed methods is defined by Johnson et al. (2007) as follows:

“The type of research in which a researcher or team of researchers combines elements of qualitative and quantitative research approaches (e.g., use of qualitative and quantitative viewpoints, data collection, analysis, inference techniques) for the broad purposes of breadth and depth of understanding and corroboration.” (Johnson et al., 2007 pp. 123)

Boyd, Finkelstein and Gove (2005) who opine that quantitative and qualitative research approaches are interdependent research methods earlier shared this perspective, therefore, combining these two methods in one is ideal, as it allows for the data from one phase to be used to support that of the other phase (QUANT -> QUAL). Using mixed methods in research also encompasses elimination of the *incompatibility thesis*, which outlines that the use of particular research methods (qualitative and quantitative) which emanate from definite, conflicting abstract research worldviews (interpretivist and positivist), creates an inherent contradiction, and hence, is unsupportable (Howe, 1988; Kuhn, 1996; Brooks et al., 2016).

The argument for a blend of methodological approaches in construction management put forward by Love et al. (2002) stresses that the adoption of a vigorous philosophical approach that takes into cognisance both ontological and epistemological perspectives is key to proffering solutions to problems confronting the construction industry. Since much of the research within construction management can be considered sociological research (Dainty, 2008), the mixed methods approach is suitable for understanding the structure and complex nature of strategies within the industry.

Tashakkori and Teddlie (2003) affirm that mixed methods research bridges the paradigmatic gap, setting it apart from the single-method alternative. Creswell (2011) proposed six significant types of mixed-method design. They are the *convergent parallel design, the explanatory sequential design, the exploratory sequential design, the embedded design, the transformative design and the multiphase design*. This study adopts the explanatory sequential design, which, according to Plano Clark (2011) comprises a first phase of collecting quantitative data and then collecting qualitative data to help explain or elaborate on the quantitative results.

The explanatory sequential design must not be confused with its exploratory counterpart, which places the qualitative strand before quantitative. Creswell & Plano Clark (2011) explain that the purpose of an exploratory sequential mixed methods design is first to gather qualitative data to explore a phenomenon and then collect quantitative data to explain relationships found in the qualitative data. This study adopts the former (explanatory mixed methods design), in order to use the quantitative data and results to give comprehensive insights into the research problem, with more detailed analysis provided through the collection of qualitative data. The qualitative stage serves to refine, extend or explain the initial general picture painted by the quantitative strand (Subedi, 2016). The sequence for the selected explanatory sequential design is highlighted in Figure 15 below, where the two phases of data gathering are conducted, and then interpretations provided from the data and conclusions drawn.



Figure 15 Sequence for explanatory sequential design for mixed methods

Furthermore, the study is carried out in the sequential approach to explicit mixed methods research as put forward by Holt & Goulding (2014). This type of mixed methods research (often denoted as EMMR) is assumed to be comprised of equally quantitative and qualitative parts. EMMR, as explained by Holt & Goulding (2014), is designed in such a way that it seeks to achieve a quantitative-qualitative methodological mix. Its counterpart, designated as *ambiguous mixed methods research (AMMR)* is a form of mixed methods “...whose design does not make such explicit, but which does so in its application” (pp. 249). Several researchers have justified the use of EMMR in favour of other approaches. A notable example is Jogulu & Pansiri (2011), who recommended the usage of the method (EMMR) by early researchers due to its ability to help in developing skills in the two most dominant data collection methods (i.e. QUAN/QUAL). In the same vein, De Silva (2011) highlighted the opportunity that adopting EMMR provides for developing research skills and suggested that the method gives a fuller and more vibrant picture of the research setting under investigation, as it allows for triangulation of data from multiple sources.

Therefore, the research adopts explicit mixed-methods approach, drawing on its wide adoption in construction management research and the quality of the output of research conducted using it. Table 10 summarises the approach and methodology that was adopted during the study.

Table 10 Philosophical underpinnings of each research component

Research Area	Approach	Methodology	Method
Literature review/Methodology	Deductive	Qualitative	Qualitative analysis
Data collection/ Analysis	Abductive	Mixed	Online Survey/Semi-structured interviews

Having established the research choice selected for the study, it is now imperative to highlight the time horizon within which the study was conducted.

6.3.7 Time Horizon

Saunders et al. (2007, p. 102) outline two major time horizons for research, which are: cross-sectional and longitudinal. Cross-sectional research is when a study is undertaken to answer a question or address a problem within a particular time frame (snapshot). The authors recommend the use of a survey or case study for cross-sectional studies.

Conversely, longitudinal studies are adopted when there is a need to answer a question or address problems that require an extended period for data collection.

Since there is a standard timeframe for the completion of a PhD, the cross-sectional time horizon is the only feasible horizon that can be adopted, given the time constraint.

6.3.8 Techniques and Procedures

The survey developed for the research was designed based on information gleaned from an extensive review of the literature and experience gained from the pilot study as prescribed by Walker (1997). The process for the pilot study is discussed further in this chapter.

Sampling was also conducted in order to select individuals from which data was collected, as data cannot be collected from all members of the population (all Quantity Surveyors, engineers and architects in Ireland in this case). The sample population comprised of senior members/managers of CPSFs registered across the three professional bodies for consultant AES firms in Ireland (i.e. RIAI, ACEI & SCSI), which is representative sample of the population from which data is drawn (Salkind, 2010).

Details of the sampling considerations, pilot study and respondent acquisition are outlined in the research design in the next section. A more in-depth analysis of the techniques and procedures adopted in the study is also explained in detail.

6.4 Research design

The research design outlines how the research instrument was designed, tested, administered, and analysed. Topics explored in this section includes questionnaire design, pilot testing, sampling techniques, data collection, handling and analysis. In addition, issues about research ethics, data validation and generasibility of method adopted/potential for re-use in subsequent research are also discussed.

6.4.1 Mixed Methods Questionnaire Design

Under this heading, the process involved in designing the mixed methods study is detailed. Since the mixed methods involved a quantitative analysis, followed by qualitative, an initial draft of thematic areas was produced and linked with the research objectives. The data in the study was triangulated via the use of the two methods (QUAN/QUAL) and the inclusion of same participants who participated in stage I in stage II (-to reduce variability of responses). The qualitative method was further adopted in addition to the quantitative in order to support the findings. The two stages in the mixed methods study are now explained.

6.4.1.1 Mixed Methods: Quantitative Questionnaire Design

In studies of this nature, there needs to be a unit of analysis in order to clarify the individual or cases about which the research is investigating (Teddlie and Tashakkori, 2009). This could be individuals, groups, artefacts or social interactions (relationships).

The unit of analysis adopted in this research was CPSFs. In order to ensure that the questions were aligned with the needs of the industry, a research proposal was submitted to the research committees of the three key professional bodies. In addition to this, a modest amount of funding was secured, subject to presenting findings of the survey at an academic conference and also to selected members of the board of the individual professional bodies (i.e. SCSi, ACEI and RIAI).

In the SCSi study, the data was collected as part of a strategy research group commissioned by the QS professional body, with the research group having two distinct research objectives and focus areas. The overall survey administered contained questions for both consultant and contractor QS firms, but only those related to consultant/professional QS firms were used for the research at hand, thus clearly differentiating results and analysis from the wider strategy research group. For this reason, the first number of questions pertaining to firm characteristics (see Table 11) were common between the two research projects, following which the survey diverges between the two studies. The questions for this study were placed first in the survey, in the same order as the latter surveys for the ACEI and RIAI, with no variability in the order or form of questions. The SCSi survey was only longer, incorporating additional questions that were not reported in this study.

The research presented focuses on firms registered with the relevant professional bodies as at the business year 2017/2018, with operations in Ireland. The key constructs in the questionnaire across all three professions are now outlined in Table 11. These constructs were included across all three surveys with no variation in the design order or format, ensuring congruency across all three professions.

Table 11 Survey themes and related authors

Question Themes	Constructs	Sources
Firm characteristics	Company size, number of years in business, ownership structure, sectors serviced and services provided; change	Murphy (2011); Pamulu (2010); Oyewobi (2014); O'Regan & Ghobadian (2002)
Strategy Process Characteristics	Corporate level strategy; business level strategy; strategic choice; Risk Attitude; planning approach ; planning horizon; participation; communication of strategy	Porter (1980); Porter (1985); Porter (1998); Covin & Slevin (1989); Miles & Snow (1978); Brews and Hunt (1999); O'Regan & Ghobadian (2002); Papke-Shields et al. (2006);
Business environment	The extent of environmental analysis undertaken	Price & Newson (2003)
Knowledge acquisition	People; process; technology; communities of practice	Wenger and Snyder (2000)
Growth strategies	Mergers and acquisitions; Joint Ventures; Internationalisation; collaboration	Cheah & Garvin (2004); Connaughton, Meikle & Teerikangas (2015)

The quantitative stage of the study was designed to cover the strategic decision-making process characteristics identified in sections 3.5 and 3.6 of the literature review. The questions were developed from the extensive knowledge base reviewed from the literature, with the terminologies simplified in some instances to eliminate ambiguity.

The resulting questionnaire comprised between 24-31 questions in 3 sections, including open-ended, multiple-choice and Likert-scale questions. Consistency was ensured in keeping the Likert scale questions to five answer choices (i.e. from **strongly disagree=1** to **strongly agree=5**). The structure of the survey was kept consistent all through the questionnaire, making it easier for the respondents to answer the questions. The structure adopted for the online survey is explained below in Table 12, while the full survey contained in Appendix A.

Table 12 Sections of Quantitative Questionnaire

Section	Topics explored	Contribution
Section 1: General company information	Demographic questions (company size, number of years in business, ownership structure, areas of business and ownership structure)	At the time of writing, such comparative data across these three professions was not available through any other source in Ireland.
Section 2: Strategic outlook	Strategic choice (Business and Corporate level strategy), growth alternatives, strategic types, change in strategic choices.	Largest study in Ireland till date regarding strategic choices, type of strategists and changes recorded since return to growth.
Section 3: Strategic decision-making characteristics	Extent, type, and dimensions of the strategic decision-making process (e.g. competitor analysis, macroeconomic analysis, repeat business, strategic communications etc.)	Contributes to the understanding of factors internal or external to the company that affect decision-making, and also how companies evaluate their decision-making process.
Section 4: Knowledge acquisition	Role of people, process and technology in strategic decision-making	This section contributes to the critical role that people, knowledge processes and technology play in strategic decision-making
Section 5: Role of the professional body	Varying questions related to the professional body	Empirical evidence for strategising in professional bodies.

In section 5, additional questions on-demand as required by individual professional body were included in varying across the three professions. Some of the questions include thoughts on the strategic direction of the professional body, role of the professional body in individual firm strategy, membership requirements and information technology.

A final question was included in the quantitative phase, where respondents were asked if they would be willing to participate in part II of the study (qualitative). This way, respondents were able to agree to participate in the qualitative phase of the study by entering their email addresses, meeting the GDPR and informed consent guidelines for personal data handling.

6.4.1.2 Mixed Methods: Qualitative Interview Design

A plethora of literature exists around the design, dissemination and interpretation of

qualitative interviews; however, there are offering a systematic framework for developing and refining interview protocols. This study adopts the 4-step interview protocol refinement (IPR) framework designed by Montoya (2016) in refining the questionnaire and aligning it with the research questions. The *interview protocol* is the same as the *qualitative interview prompt sheet*. These four steps include the following:

Step 1: Ensuring interview questions align with research questions,

Step 2: Constructing an inquiry-based conversation,

Step 3: Receiving feedback on interview protocols

Step 4: Piloting the interview protocol.

Adopting the IPR strengthened the rigour of the qualitative interviews, thereby enhancing the quality of data obtained. It also enabled benchmarking the rigour of the approach taken to the study, ensuring congruency with the objectives of the study (Jones et al., 2014). The researcher used the IPR in identifying themes and patterns of meaning across the dataset and link them back to the research questions. The IPR framework also enabled the researcher to elicit rich, focused, meaningful data that captures, to the extent possible, the experiences of participants.

Step 1: Ensuring Interview Questions Align With Research Questions

The first step was focused on the alignment between interview questions and research questions. This step was primarily guided by the quantitative questionnaire, and led to an increase in the utility of interview questions (confirming their purpose), while ensuring their necessity for the study (eliminating unnecessary ones). Only questions that are directly linked to the research questions were retained, and the questionnaire trimmed

down from eighteen questions to ten questions. Table 13 shows a portion of the matrix used to fine-tune interview questions listed in rows and research objectives in columns. The cells were then marked off to indicate when a particular interview question has the potential to elicit information relevant to a particular research question (Neumann, 2008). The full matrix adapted for the study, cross-referenced with the appropriate research question is available in Appendix B.

Table 13 Example of Interview Protocol Matrix

	Research Objective I	Research Objective II	Research Objective III	Research Objective IV
Interview Q1	X			X
Interview Q2	X	X		
Interview Q3		X	X	
Interview Q4		X	X	
Interview Q5		X	X	X
Interview Q6	X	X		

Rubin & Rubin (2012) outlined that questions most connected to the study’s purpose should be inserted in the middle of the interview after the researcher has built a rapport with the interviewee and this was taken into consideration, while drafting the questions. The aim of confirming the alignment between interview questions and research questions shown in Table 13 does not mean that the researcher is forcing questions to conform to the research questions. The central focus was on eliciting answers that are meaningful and useful in understanding the interviewee’s perspective, as indicated by Patton (2015).

Step 2: Constructing an Inquiry-Based Conversation

Rubin & Rubin (2012) argue that the researcher faces a herculean task in guiding an interview from a mere conversation to an inquiry. Phase 2 of the qualitative questionnaire

design entails the researcher developing an inquiry-based conversation through the interview protocol, while paying attention to the following:

- a) Interview questions are written differently from the research questions;
- b) Arranging questions in a format aligning with the social rules of ordinary conversation;
- c) Introducing varying questions, while keeping the research questions in mind;
- d) A detailed script with likely follow-up and prompt questions;
- e) Limiting bias and leading questions.

Maxwell (2013) pointed out that while research questions focus on what needs to be understood, interview questions need to be constructed in a way as to gain that understanding. The researcher ensured that the interview questions were expressed in “...*the everyday language of the interviewees*” (Brinkmann and Kvale, 2015; p. 158) and Table 14 outlines the first page of interview protocol developed for the study (full protocol in Appendix C).

Step 3: Receiving Feedback on the Interview Protocol

In the qualitative questionnaire design, steps 1 and 2 were primarily researcher-driven, however steps 3 and 4 were mainly external, as they entail getting feedback on the developed interview protocol. The purpose of obtaining this feedback on the interview protocol is to enhance its rigour—its trustworthiness—as a research instrument. This feedback was critical to the study, as the feedback was independent of the views of the researcher and thus, able to provide a third-party view as to how well participants will understand the interview questions and whether their understanding is close to what the researcher intends or expects (Patton, 2015).

Table 14 First page of qualitative interview protocol

<p>Question: About firm</p> <p>To begin this interview, I'd like to ask you some questions about the practice and the business which you are involved (mostly about issues surrounding role, number of years of experience/working with the firm, and career/academic background for context)</p>	<p>Possible follow-up questions/Themes (Links: Tell me about.....</p>			
<p>1. Based on the information provided in the earlier phase, your firm is a PQS/ENG/ARCH firm. Were you working here when the firm was founded? How did you get into the construction industry?</p> <p>If the interviewee identifies as having been with the firm since inception, probe with the next questions.</p> <p>Vision, mission of the firm: written or not</p> <p>Tell me about the core business areas of the firm. Have they changed or not since inception?</p> <p>Can you walk me through the process of decision-making within your firm? Who participates in goal-setting?</p> <p>2. Open-ended question: Let's talk about the Irish construction sector. How did your firm pull through the recession? How did/are you respond/ing to the crash/recovery?</p>	<p>Strategy type</p>	<p>Scope</p>	<p>Planning horizon</p>	<p>Participation</p>
<p>Follow up: What was that business like in that period?</p>	<p>Impact on service offerings (reduction/increase/stable /other)</p>	<p>Retrenchment</p>	<p>Response strategies</p>	<p>Adaptation/Change</p>

The researcher employed three main steps in this stage of the study. First, a close reading of the interview protocols was done over one hour. This enabled the researcher to spot any errors or sentences that are hard to understand. Next, the researcher employed a vetting process to the protocol through a think-aloud activity as recommended by Montoya (2016). Lastly, the lead supervisor of the study was further allowed to read through the interview protocol to double-check and proofread.

After these three steps of validating the interview protocol, the questionnaire was pilot tested (step 4). The pilot test phase for both the quantitative and qualitative strands are discussed in the next section.

6.4.2 Pilot study

The aim of the pilot test phase is to use a limited number of cases for external validity of the research instrument to be adopted, in preparation of a later full-scale study. Pilot testing a research instrument within strategy research is critical as it helps the study to establish a valid and reliable instrument that can be used to study strategy further (Jansson and Söderman, 2015). The pilot testing was done in two phases: quantitative and qualitative phases, and the process involved is outlined below.

6.4.2.1 Quantitative Strand

In order to test the validity of constructs used in the quantitative questionnaire, and the ease of understanding and responding to the survey, a pilot test was carried out. This test is recommended for testing questionnaires, interview checklist or observation schedules in order to minimise the possibility of respondents having problems in answering the questions (Hitchcock and Hughes 1995). Pilot tests also help in assessing the validity and

reliability of the data collected (Saunders et al., 2009).

In November 2017, the pilot surveys were sent out to *seventeen contacts* (17) who were AES professionals, and who volunteered to take part in the survey. The population consists of both academic and industry practitioners, and respondents were requested to answer the survey and highlight any parts of the questionnaire that need clarification and refinement. The pilot survey was sent out via email, with a link to the online survey portal, *Survey Monkey*. The pilot survey contained twenty-five questions (25), with seven (7) additional questions targeted mainly at feedback only.

The pilot study returned only seven (7) responses and the responses provided were used in fine-tuning the questions, reducing the length of questions and increasing readability prior to its full-scale administration.

Some of the comments provided by the pilot test respondents are included in Table 15. On receiving feedback, the comments were used to redesign the survey accordingly. The feedback was split into four broad areas and addressed accordingly, and more clarity was provided for some questions and simpler wording used to ease understanding.

Table 15 Feedback from Pilot test respondents

Theme	Comments
Fonts	“The font for the section descriptions is rather small; it would be a good idea to make it at least the same size as the questions themselves.”
Structure/Syntax	“There is no need to number each section, then have "Section 1" or "Section 2" also. Please remove the bulleted number and leave it as "Section 1.”
	“Question 2: the lower tier options can be removed as the SCSI have provided a target (senior) respondent for each company. Remove junior QS and QS options.”
	“Question 7: suggest you put the answer options into 2 columns.”
Grammar	“Question 15: the wording of this needs to be stronger. You would like respondents to confirm the extent to which these environmental factors are driving/shaping their

	strategic decisions.”
Technicality	“Question 4: please include another option 51-150, and then 151-249 as this will yield better results.”
	“Question 6: the question should allow respondents to select more than one option. Therefore the question should state - select as many are as appropriate.”
	“Heading is too similar to section 3 - must be different, or respondents will think you're asking the same thing twice.”
	“Question 10: in the question add "outlook and future direction."

The data in Table 15 highlights that most of the comments from the pilot phase regarding the quantitative questionnaire were related to technicalities and structure. The pilot phase enabled fine-tuning of the questionnaire, reinforcing its suitability for use in the main study.

6.4.2.2 Qualitative Strand

In the qualitative phase, the pilot study was conducted with the guidance of the IPR framework designed by Montoya (2016). Step 4 of the processes in the IPR framework involved pilot testing the interview protocol. This is after the three previous steps had ensured that questions were aligned with the study’s research aim, that the style of questions has been constructed to become conversational, and most importantly inquiry-driven. Each question in the interview protocol was also checked to ensure simplicity and ease of response. The interview protocol was also brought through close reading, think-aloud activities and received feedback from experienced researchers. At this point, the study was ready to be pilot tested with individuals who mirror the characteristics of the sample to be interviewed for the actual study (Maxwell, 2013).

The pilot phase for the qualitative questionnaire simulated the actual interview as close as possible. Notes taken during the pilot study were based on the interviewer’s experience

of conducting the interview and not from an inquiry of the interviewee's thought process (Montoya, 2016). One of the benefits of the pilot test is that it allowed the researcher to tell whether the other questions are suitable or not (Merriam, 2009). Another key benefit was that the interviewer was able to simulate rapport, process, consent, space, recording, and timing in order to "try out" the research instrument (Baker, 1994).

The pilot phase of the qualitative stage was conducted in January 2019, with four participants (one from each profession, i.e. QS/ENG/ARCH and one academic as a control), and the pilot enables the researcher gain insights into how long the interview takes and whether interviewees were able to answer questions. After the pilot interviews, areas of improvements in the interview protocol were noted and used to make final revisions to interview protocols (Maxwell, 2013). A sample of the pilot test feedback form is attached in Table 16.

Data from the pilot interviews (shown in Table 16) was then used to revise the interview protocol for the main study. The first significant feedback was in the classification of firms by size used in the study. The researcher initially adopted the European Commission (2005) for classification of firms based on size, i.e. micro (<10 workers), small (11-50 workers), medium (51-249 workers) and large firms (>250 workers).

One of the key findings from the pilot study feedback tool in Table 16 was related to the classification of firms within professional services, which is different from that used in contracting firms. In PSFs, a firm with less than 10 employees is regarded as small, between 10-50 employees tagged medium-sized and any firm with over 50 employees regarded as large. Thus, the classification based on size had to be corrected and amended to suit accepted standards within the industry.

Table 16 Activity Checklist for Close Reading of Interview Protocol (Adapted from Montoya, 2016)

Instructions: *Read questions aloud and mark yes or no for each item depending on whether you see that item present in the interview protocol.*

Aspects of Interview Protocol	Yes	No	Feedback for Improvement
Interview Protocol Structure			
Preliminary questions were realistic in nature			
Majority of the questions are relevant, and well placed within the interview protocol			
Questions at the end of interview protocol allowed participants an opportunity to share closing comments			
The connecting scripts throughout the interview protocol provides smooth transitions between topic areas			
Interviewer closed with expressed gratitude and any intents to stay connected or follow up			
Overall, interview is organised to promote conversational flow			
Writing of Interview Questions & Statements			
Questions/statements are free from grammar and spelling error(s)			
Only one question is asked at a time			
Most questions ask participants to describe their experiences and feelings as related to their firm			
Questions are mostly open-ended			
Questions are written in a non-judgmental and non-intrusive manner			
Length of Interview Protocol			
All questions are needed			
Questions/statements are concise			
Comprehension			
Questions/statements are devoid of academic language			
Questions/statements are easy to understand			

Other comments from the pilot test include the recommendation to change “planning horizon” to a less ambiguous term as some participants did not understand what it meant. The term was changed and these are reflected in the final questionnaire. Other comments and changes made to the questionnaire include:

- Shortening question lengths
- Inclusion of at least one micro-economic indicator in the industry and economic outlook sections as opposed to previous macro-economic focus.
- Need to reduce the use of “academic” strategy terminologies as respondents were not familiar with some of the terms, but understand the underlying concepts.
- The decision to exclude non-financial terms in the study was justified as respondents were careful when speaking about financial issues relating to the company.
- Whenever the interview crossed the 30-minute mark, interviewees started losing focus and tend to breeze through the questions, reducing response quality. Hence, critical questions were prioritised and asked first, while leaving less important ones until later.
- Interview technique needed to be adjusted to allow interviewees to spend more time talking.

6.4.2.3 Lessons Learned from The Pilot Phase

The pilot study assisted the researcher in gaining key insights into what the firms currently thought and knew about the strategy process in Irish CPSFs. While the pilot study provided evidence that most CPSFs do not undertake formal strategising, the responses showed that respondents were thinking and acting strategically howbeit in a disorderly and unwritten manner. Only large practices would usually have a written strategy, and

the formality of the same differs across firms.

Another evident trend in the macroeconomic part of the industry is the low unemployment rate but high skills shortage, which was mentioned across all firms. Firms were beginning to consider more strategic partnerships and joint ventures in order to win more work. Overall, the adoption of formal strategy tools and management principles were limited in practice. In addition, while IT tools and software were considered necessary, lack of client demand and market pull forces for the implementation of BIM meant that it was considered as optional, rather than critical to competitiveness.

Another crucial finding was that firms had some strategy that aligned with established theory, irrespective of whether the firms knew they were strategising or not. Firms also did not conduct any form of competitor analysis or industry and focused mainly on gleanings from industry reports and publications. Several conclusions were drawn from this study:

- Constructions PSFs engage in strategic decision-making, but usually informally/passively.
- Limited competitor/industry analysis conducted.
- Firm reputation and repeat business are the key strategic issues for PSFs.

Having received concrete feedback from the pilot study and revised the questionnaires accordingly, the approach to selecting the sample population for the study is now discussed.

6.4.3 Sampling

Sampling is the process of selecting units (e.g. people, organisations) from a population

of interest, in such a way that results may be generalised across the entire population from which the sample was chosen (Trochim, 2006). Sampling was conducted in order to select individuals from which data will be collected, as data cannot be collected from all members of the population (all Quantity Surveyors, engineers and Architects in Ireland in this case). The sample population is the representative sample of the population from which data is drawn; the results of the study can be generalised to the population as a whole (Salkind, 2010). Details of the sampling considerations process for the study are outlined in this section.

6.4.3.1 Quantitative Strand

Malhotra et al. (2004) prescribed that when making a choice of the sampling technique to be used for analysis, the following five processes should be followed:

(1) **Define the research population:** Since this study is to be conducted across construction professionals firms, the three major professional bodies that register and regulate the three professions were identified. These are the Society of Chartered Surveyors Ireland (SCSI), The Association of Consulting Engineers Ireland (ACEI) and the Royal Institution of Architects in Ireland (RIAI). These three bodies are responsible for the regulation and registration of chartered surveyors, consultant engineers and registered architects in Ireland respectively. Since addressing the source of information is critical to obtain accurate data (Healey and Rawlinson, 1994), senior managers were well-positioned to know about strategy due to their expertise and the higher likelihood that they would have prior experience in engaging with decision-making.

(2) **Determine the sampling frame:** registered firms with the respective professional bodies were deemed to fit within the sampling frame, as the study is not regional, but

across all practices registered under the respective bodies. An exclusion criterion was included for the SCSi, as quantity surveying firms only were considered as they are the focus under the study. Other types of surveying firms such as geomatics surveying and land surveyors were excluded.

(3) **Select the sampling technique:** Bryman (2012) espoused different sampling techniques, including probability and non-probability sampling. Atkins et al. (2008) highlighted that the choice of the sampling technique chosen should align with the research objectives and appropriate to the research question.

For both strands of the research (quantitative and qualitative), a rigid sampling strategy was followed, i.e. *non-probability sampling*. This sampling method is based on selection of respondents by non-random means (Walliman, 2017). This method of sampling is useful for studies where difficulty exists in getting access to the entire population (Singh, 2018). The weakness of this sampling method is that it provides a weak basis for generalization, however, non-probabilistic sampling helps in situations when there is time and resource constraints such as a PhD study, and also where the sample is required for representativeness.

The population was already defined, and due to resource and time implications, similar surveys should have been sent out to all professions in the population. The purposive sampling technique, where participants are chosen based on personal judgement and established criteria was used. The technique is the most frequently used form of non-probability sampling in qualitative research (Miles and Huberman, 1994). Other non-probabilistic sampling techniques not used are shown in Table 17.

Table 17 Sampling methods and their characteristics

Non-probabilistic Sampling method	Characteristics
Quota sampling	Used as a substitute for a probability sample to select participants when a sampling frame is not available
Snowball and self-selection sampling	Those where participants volunteer
Random sampling	Those where participants are included for convenience

The purposive sampling technique uses personal judgement to select cases that best enables the researcher to answer the research question and meet the aim. They are typically used to choose a relatively small number of informative participants (Neuman, 2005).

(4) **Determine the sample size:** number of eligible firms in professional body database, i.e. SCSI, ACEI and RIAI.

(5) **Execute the sampling process:** completed via refining the database provided by the professional bodies and streamlining it down to firms who are PSFs, and registered with the professional body (counting both individual and firm-level membership).

Due to a large number of PSFs registered with the individual professional bodies' i.e. SCSI, ACEI and RIAI, and the nature of the research questions, not all the firms were deemed relevant to the study. For instance, when the SCSI list was received from the professional body, each respondent on the list was investigated to ensure accuracy of the contact details and to avoid coverage error (Denscombe, 2002). This verification process was done by calling and verifying the contact details of the identified senior member of the management team that had been selected as a key informant for the study. Also, this verification process was done in order to ensure that only QS firms were included in the sample, as the full list contained property, land and geomatic surveyors.

The verification process allowed the researcher to establish whether the practice was functional and to determine the direct contact details of the key informant, i.e. CEO/senior partner (strategist) as adopted in Murphy (2011). In the ACEI and RIAI samples, this process was not required as the professional bodies had carefully cleaned the database and also because the GDPR was in full enforcement during this time and the professional bodies were not allowed to share contact lists of member firms. However, the researcher confirmed the accuracy of the database from the professional bodies and this was considered sufficient in the case of architectural and consulting engineering practices.

At the end of the sampling process, the number of firms in each sample is as follows:

RIAI: 510 firms;	ACEI: 99 firms;	SCSI: 236 firms
-------------------------	------------------------	------------------------

The next section outlines the sampling process in the qualitative strand.

6.4.3.2 Qualitative Strand

The qualitative phase engaged a two-tiered selection process. Firstly, the selection of the cases was based on a criterion sampling strategy, which aligned with the earlier established thresholds for the classification of firms based on size. Survey participants from the previous quantitative study who indicated that they would like to participate in the qualitative phase were adopted for the study. These participants were given the option to opt-in to the qualitative phase and requested to provide their email addresses as proof of consent. The first step was to classify the firms based on size. This classification was preferred as opposed to that used by Tansey et al. (2017) in a similar study, due to the inability to access company financial records and GDPR (Tansey et al. used financial metrics in determining whether a firm was considered an SME or large enterprise). The

second tier of selection was convenience sampling, which was used to select respondents in a bid to overcome the risk of low response rates (Abowitz and Toole, 2010), particularly given the sensitivity of the required information.

The second part of data collection utilised one source of data, i.e. qualitative data, derived from semi-structured in-depth interviews only. The interviews were semi-structured as the feedback from the pilot study showed that richer responses are received when the questions were staggered or randomised and not asked in a fixed order. The limitation to interview data alone as opposed to the adoption of company documents and archival documents (cf. Tansey et al.; 2017) is due to the constraints imposed by the GDPR and the fact that the researcher is local to Ireland, making access to these documents difficult.

The theoretic sampling criteria (Strauss and Corbin 1990) were adhered to when selecting participants for the qualitative phase i.e.,

(1) they were “strategists” or management level executives, who as part of their formal role and duties, are involved in strategic decision making (Higgs and Dulewicz, 1998);

(2) they were in a position to answer strategy-related questions on behalf of their firms (Jarratt and Stiles, 2010); and,

(3) they had sufficient expertise and experience in decision-making, thus making them suitable to partake in the study.

All participants in the study were all senior management level executives; who were considered experienced enough to answer questions about the future of their organisations (Tansey et al., 2017). This phase of the study adopted similar selection procedures to that of Jarratt and Stiles (2010), with each “strategist” representing one unit of analysis within

each firm. This study endeavoured to bring in perspectives of firms of all sizes (SME & large); however, the sample presented very few large firms across all three professions; hence the interviews were predominantly conducted with Small and Medium sized firms. A total of 27 semi-structured interviews were conducted, with key stakeholders representing 9 QS firms, consulting engineering firms, and architectural practices respectively.

Having explored the sampling process employed in the study, the data collection process is now explained.

6.5 Data Collection

This section details the process involved in data collection for this study. It details the account of the two stages of data collections, tools employed and the profile of respondents in both stages. The quantitative data collection process (stage I) is explained first, followed by the qualitative (stage II).

6.5.1 Quantitative Data Collection

Having designed the survey, key senior executives of the selected professional bodies i.e. SCSI, ACEI & RIAI were contacted via email to fill in the online survey as recommended by Jarratt and Stiles (2010). The benefits of using an online medium for the distribution of surveys are numerous, with some of them being:

- Best for reaching a large geographically dispersed sample with good accuracy, in a cost-effective manner and within a reasonable time frame (Wright, 2005)
- Increased penetration due to high internet use by managers (Van Selm & Jankowski, 2006)
- Possible increased response rates (Taylor-Powell and Hermann, 2000)

- Eliminates the stress of manual data entry/calculations (Van Selm & Jankowski, 2006)

As with any other forms of questionnaire dissemination, online surveys are vulnerable to low response rates for several reasons such as sampling issues, response time constraints, and confidentiality concerns. Previous studies suggest the following factors may influence response rates for questionnaires:

- cover letter design (Bryman, 2012),
- questionnaire length, the difficulty of questions (Dillman et al., 1993),
- confidence in anonymity (Diamantopoulos and Schlegelmilch, 1996).

Accordingly, the researcher took several measures to maximise the response rate and reduce the effect of the above issues. In addition, care is taken to ensure that the average response rate is above 21%, which is the average suggested by Dillman (2002) for quantitative surveys. Copies of the invitation email for the quantitative survey is contained in Appendix G. Reminder emails were sent out every two weeks over the timeline when the surveys were open. Two reminders were sent out over the one month for each survey. The response rates were considered excellent response rates and are in line (or above) other research (e.g. Pamulu, 2010; Murphy, 2011; Oyewobi, 2014) and are shown in Table 18.

Table 18 Response rates per profession (Quantitative Strand)

Profession	Population	Responses	Rate (%)
Architectural (ARCH)	510	116	22.75
Engineering firms (ENG)	99	43	43.43
Surveying firms (QS)	236	66	27.69

The overall data was then downloaded into Microsoft Excel for analysis purposes.

6.5.2 Qualitative Data Collection

Interviews provide the researcher with rich and detailed qualitative data for understanding the experiences of participants, how they describe those experiences, and the meaning they make of those experiences (Rubin & Rubin, 2012). Interview participants were sent a standardised information pack, including a research consent form and an information sheet, a tabulated list of research themes, and a copy of the interview questions at least one week before the interview (Price, 2003). These documents were provided as part of the informed consent procedure at the Technological University Dublin. Sending the documents before the interview gave the participant's time to reflect on the questions, and be prepared for the interview and ensured consistency in the analysis stage (Langenhan et al., 2013).

Interviews were audio-recorded and transcribed verbatim, with the participants' written consent and stored on secure drives within the Technological University Dublin.

Twenty-seven participants were interviewed, nine senior management personnel each from different architectural, engineering and surveying (AES) firms. The data from all respondents that participated in the interviews are recorded in Table 19, with details about the location of their firms, and the codes used to represent the firms in NVivo 12® (also for anonymity), and the years of experience of the strategists.

The selection of the firms that participated in the study entailed a three-tiered selection process adapted from Tansey et al. (2017). The first criterion was based on a criterion sampling strategy, which focused on firm size. The firm sizes informed the codes adopted for labelling the firms, i.e. LA1- Large architectural firm 1, ME1- Medium-sized

Consultant Engineering firm 1, SQ1- Small PQS firm 1. The differences between the firm size classification used and that outlined by the European Commission (2005) has been previously explained.

Next, the prerequisite to be satisfied before a firm was contacted for participation in the study was that it had already indicated its intention to participate in stage II of the research in the earlier stage (stage I- Quantitative phase). This is due to the General Data Protection Regulations (GDPR) introduced in 2018; thus, firms could not be contacted unless they expressly give their permission to be contacted via email.

Thirdly, convenience sampling was adopted in order to overcome the challenge of low response rates in applied settings (Abowitz and Toole, 2010), particularly given the sensitive nature of information requested from participants. Similar to Tansey et al. (2017), access to professional networks and industry connections assisted in the identification of the senior executives. The participants were simply reminded via their consent given earlier in stage I.

The data of the firms who participated in the stage II is outlined in Table 19. A full list of the profile of firms who participated in this phase, detailing their size, location, years in business and other data is appended in Appendix E.

Table 19 List of respondents in the qualitative phase

Profession	Number of participants across different organisations
Architecture	9 participants across each firm (1 respondent per firm)
Engineering	9 participants across each firm (1 respondent per firm)
Surveying	9 participants across each firm (1 respondent per firm)

The semi-structured in-depth interviews adopted in the qualitative stage also were supported by use of documentary research information such as company annual reports,

annual financial statements, in-house strategy documents and publications. This additional material was only used in conjunction with the information provided directly from the in-depth interviews. The interviews spanned two months (between February and March, 2019), and the strategists interviewed had extensive responsibility and experience of strategy within the firms with a minimum ten years work experience. (Appendix E).

The transcription process was undertaken by an external transcription company, following the completion of a confidentiality agreement. This introduced an extra layer of quality assurance in the process. The average interview length was 34 minutes, with some lasting over 1 hour. After transcription was complete, each transcript was returned first to the researcher for review, and then, to each respondent for verification as recommended by Yin (2014). This was to ensure that the transcripts fully reflected the interview data and also as another level of quality assurance.

In two instances, respondents reviewed the transcripts and felt it contained some information that might identify the company in it and asked for it to be redacted. This was done and returned again to them for final approval. All these steps were taken to ensure the confidentiality of the respondents and also to stay within TU Dublin and GDPR guidelines. After confirming the transcripts, the documents were labelled using non-identifying acronyms and saved in a secure folder.

6.6 Data Analysis

This section details the process involved in data analysis for this study. It begins with an account of the two stages of data analysis, emphasising how the data was prepared, analysed and interpreted. The quantitative data analysis process (stage I) is explained first, followed by the qualitative (stage II).

6.6.1 Quantitative Data Analysis

A vast majority of studies in strategic management adopt descriptive and correlational studies in analysing quantitative data. Trochim (2006) recommends the following steps in the analysis of quantitative data, which are:

Data preparation: cleaning and organising the data for analysis. In this study, the data was downloaded into an excel sheet, checked for accuracy with the online version, and documented into a database structure using filters such as size, ownership structure etc. Only complete questionnaires were included in the study i.e. only entries that were completed beyond *Question 10*.

Descriptive statistics: describing the data using percentages or measures/scales. At this stage, descriptive statistics are used to describe the basic features of the data, providing simple summaries about the sample and the measures. Using simple graphics analysis, this analysis formed the basis of the quantitative analysis of data, exploring what the data shows based on respondents' choices.

The last category is inferential statistics, which involves testing hypotheses or modelling, but it is not explored in this study as no hypotheses were proposed in the study. Trochim (2006) further described three approaches to data analysis, namely: descriptive, relational and causal. Descriptive studies seek to describe what is going or what exists. Relational studies looks at the relationships between two or more variables, while causal studies are designed to determine whether one or more variables (e.g., a process variable) causes or affects one or more outcome variables. Table 20 below contains recent PhD studies in strategy in construction and the approach adopted.

Table 20 A review of recent PhD studies within strategy domain in construction and methods employed

Author/Year	Study domain	Unit of analysis	Analysis employed/Tool	Approach to Analysis
Pamulu (2010)	Strategic management practices	Dynamic capabilities	Hierarchical multiple regressions/SPSS	Relational
Flemming(2011)	Strategic leadership of architectural firms in Ireland	The role of emotion management and innovation	Multiple regression modelling/SPSS	Causal
Murphy (2011)	Strategic planning in Irish QS firms	Strategic planning process characteristics/strategic choices	Triangulation/NVivo	Descriptive
Oyewobi (2014)	Modelling Performance Differentials In Large Construction Organisations	Strategic performance	Partial Least Square Structural Equation Modelling (PLS-SEM)/SPSS	Causal
Ojiako (2015)	Enhancing the Successful Delivery of Service Operations	IT/ service operations projects/Risk	Single and multi-case studies/ Multiple regression modelling (SPSS)	Relational
Lowstedt (2015)	Strategizing in construction: Exploring practices And paradoxes	Strategy-as-Practice in a large construction firm	Ethnographic study	Descriptive
Tansey (2018)	Turnaround strategies	Porter's generic strategies/Strategy-as practice	Case Narratives /CAQDAS	Descriptive

The data in Table 20 outlines that the descriptive approach is the most frequently selected as used by Murphy (2011), Lowstedt (2015) and Tansey (2018), whose studies are most similar to the objectives of the current study. Therefore, the descriptive approach is adopted as it allows for an exploration of the strategic decision-making process in the CPSFs.

6.6.2 Qualitative Data Analysis

The method used in the analysis of the qualitative data collected via interviews is based on the data analysis framework as defined by Miles & Huberman (1994). Maykut &

Morehouse (1994) outlined that understanding qualitative data is a critical means of gaining insights *into situations. Thus, during the qualitative phase, the role of the researcher is to "...find patterns within those words and to present those patterns for others to inspect"* (p18). Therefore, this section sets out the analytical cycles planned for phase II of this study.

It is crucial to outline first that the aim of qualitative research is not to espouse mathematical abstractions; however, the process must be systematic in its approach to data collection and analysis. Framed by the already established focus of inquiry from the quantitative data, the data for phase II was collected via semi-structured interviews to support the data collected in phase I. In the interview process, open-ended questioning was used to allow participants to articulate their perceptions and experiences freely and spontaneously (Langenhan et al., 2013). The analysis did not involve grouping responses into pre-defined categories at first, rather broad themes and categories related to meanings and relationships were derived from the data itself. This was accomplished through inductive reasoning known as coding units (Stemler, 2001). The coding process entailed disaggregating the data into discrete 'incidents' (Glaser and Strauss, 1967) or 'units' (Lincoln and Guba, 1985) and classifying them to broad categories.

Thematic analysis by Braun & Clarke (2006) was adopted in the analysis of the data, which is a method for the identification, analysis and reporting of patterns (themes) within data. The analysis technique allows for organising and describing the data in (rich) detail.

During the interviews, two forms of categories were identified, namely: *categories emerging from the participants' speech, and those that the researcher identified as significant to the research inquiry.* The goal of the former "is to reconstruct the categories

used by subjects to conceptualise their own experiences and world view”, while the latter aims to help the researcher deduce theoretical insights into the strategy processes operating within the firm under study; thus: “*the process thought that leads to both descriptive and explanatory categories*” (Lincoln and Guba, 1985, pp 341). The process involved moving from mere descriptions through to themes and sub-themes.

The categories in the study are not static; they undergo content and definition iterations as the as units and incidents are compared and categorised through cycles of coding, and as understandings of the underpinning findings/relationships between categories are developed and refined throughout the analytical process. The coding and analysis process was done simultaneously, as was the development of concepts via comparison of specific incidents in the data, continuous refinement and consequent integration into a coherent explanatory model (Taylor and Bogdan, 1984).

6.6.2.1 Using Qualitative Data Analysis Software

Several criticisms exist to the use of qualitative data analysis software, and within the study, the researcher does not cede the task of analysis solely to the computer; instead the software is used as a tool for achieving greater efficiency and not as a replacement for rigour in analysis, neither is it used for drawing conclusions. This is important, as it is vital for the researcher to remain in charge, while using tools that support analysis (Fielding and Lee, 1998). The adoption of software for analysis is more of a proof of transparency and replicability as it produces an audit trail for the data. It also gives greater scope for creativity and innovation with the data, as much as establishing a key criterion on which the trustworthiness and plausibility of a study can be established. The use of qualitative analysis software’s allows for logging of data analysis and coding patterns,

and mapping of conceptual categories and thought progression, allow for traceability and clarity in all stages of the analytical process.

This section sets out the cycles of analysis planned for this study. There were seven discrete cycles of analyses as espoused by Moustakas' modified Van Kaam method known as the 'seven steps'. The seven steps and the corresponding processes were transacted through a computer software product known as NVivo. NVivo is a specialist package developed as a computer-aided qualitative data analysis system (CAQDAS) and is widely used by researchers as a tool for managing qualitative studies. The software is now standard software for qualitative analysis across the world.

6.6.2.2 Phases in Qualitative Data Analysis

The analytical process involved three separate cycles of coding (i.e. two cycles of managing codes and one for initial categorisation of open codes), one cycle of data reduction through consolidating codes into a more conceptual framework and three other cycles which uses writing itself as a tool to prompt deeper thinking of the data (Bazeley, 2009). The last three cycles led to findings from which conclusions were drawn and a concrete theoretical model proposed. These seven phases are now explained:

Phase 1: The researcher engages in transcribing the interview transcripts, field notes and observations as well as demographic and other anonymised profiling information into a Word Document for import into NVivo.

Phase 2: The researcher conducted extensive participant-driven open coding of the interviews from their original textual characteristics into initial non-hierarchical codes supported with definitions to deconstruct the data into first general themes. Maykut & Morehouse (1994) directed that themes developed in this phase should have clear, broad

labels and definitions to serve as rules for inclusion (or exclusion) as needed.

Phase 3: In this phase, data cleaning techniques in NVivo were used to categorise the data and to enable re-ordering themes identified and coded in phase 1 into categories of themes by grouping related themes. The categories were distilled further, relabelled and merged to ensure that labels accurately reflect coded content (see Appendix H)

Phase 4: In this phase, data reduction is conducted which involves consolidating/refining codes into a more conceptual map of a final framework of codes (see Appendix I)







Phase 5: During this phase, analytical memos were written against the higher-level codes to accurately summarise the content of each category and its codes. These memos focus on the content of code clusters, identifying patterns where relevant and situating the code(s) in the storyboard (i.e. exploring interconnectedness in the codes to each other and drawing inferences from it into a cohesive story or narrative). The production of analytical memos enabled the researcher to create initial findings from which conclusions may be drawn.

Phase 6: In the validation phase, the categories are tested, validated and revised in line with the analytical memos in order to be able to self-audit proposed findings by seeking evidence in the data beyond textual quotes. This phase involves the researcher's diligence in comparing the notes taken during interviews to support the stated findings and explore deeper meanings embedded in the data.

Phase 7: This is the final phase of analysis, which entails synthesising analytical memos into a coherent, cohesive and well-supported outcome statement of findings. Findings were written up and conclusions drawn for the discussion.

Table 21 elaborates on the seven phases as adapted from Miles & Huberman (1994).

Table 21 Phases and Process involved in Qualitative Analysis - Adapted from Miles & Huberman (1994). Analytical Hierarchy to data analysis

Analytical Process (Miles and Huberman, 1994)	Miles & Huberman Practical Application in NVivo	Objective	Iterative process throughout analysis
Data collection	Phase 1: Transcription of audio recordings, formatting demographic and other profiling information into a single table for import into NVivo.	Data Management (Open and hierarchal via NVivo)	Assigning data to refined concepts to portray meaning.
Start list	Phase 2 – Open Coding		 Refining and distilling more abstract concepts
Data visualisation	Phase 3 – Categorisation of Codes	Descriptive Accounts (Reordering, ‘coding on’ and annotating through NVivo)	 Assigning data to themes/concepts to portray meaning
Data reduction	Phase 4 – Data Reduction/Consolidation Phase 5 – Writing Analytical Memos		 Assigning meaning
Conclusions	Phase 6 – Validating Analytical Memos Phase 7 – Synthesising Analytical Memos and writing up	Explanatory Accounts (Extrapolating deeper meaning, drafting summary statements and analytical memos through NVivo)	 Generating themes and concepts

6.6.2.3 Transcription of Audio Recordings, Formatting Demographic and Other Profiling Information Into A Single Table For Import Into NVivo.

Creswell (2007) outlined that one primary concern of qualitative interviews is evidentiary adequacy, i.e. whether sufficient time was spent in the field and the extensiveness of the data to be presented as evidence. After completion of the interviews, there were 929 minutes of recording over 26 interviews, while three of the respondents preferred not to have the interview recorded and thus only notes were taken. These notes were written up in full and anonymised as they did not require transcription. The files that needed transcription were handled in a systematic and organised manner via an external transcription company. This reduced the possibility for researcher bias and also served as a quality assurance mechanism, as the transcription process was completed via a third-party company. Appropriate non-disclosure and confidentiality agreements were signed, and all ethical guidelines for the handling of audio and written files within TU Dublin were strictly adhered to. The transcribed files were then returned to the researcher and checked for accuracy and correctness. As an additional level of quality assurance, the transcribed files were sent on to the respective interviewees for verification. In addition, the researcher took notes from all interviews attended and recorded observations either that evening or the next day. These meeting notes provided additional supporting data for validation of the transcripts as recommended by Miles & Huberman (1994). Each transcript was individually reviewed for correctness and accuracy, without any pre-determined propositions and with no particular codification technique, but with only the intention of having the data “speak” (Lövstedt et al., 2011).

The validated transcripts were then fed into the qualitative data analysis software (NVivo 12), and arranged based on the profession types. From these readings, the demographic

data from the transcripts were mined and were recorded. At this stage, only a simple content analysis was carried out, resulting in key demographic data.

6.6.2.4 Open Coding

The second phase of the data analysis entailed open coding, which was used in the identification of the various sub-categories associated with the central theme of strategic decision making. The open coding phase involves broad participant-driven coding of the transcripts supported by descriptions of the codes, to deconstruct the data into general themes that can be categorised further and generate meanings. In this phase, **seventy-eight** open coding nodes were developed, with each node having clear labels and definitions which serve as rules of inclusion for units of meaning from the transcripts (Maykut & Morehouse, 1994). A node is the central unit for understanding and working with NVivo, letting the researcher gather related material in one place in order to look for emerging patterns and ideas (QSR International, 2019). Nodes can then be organised into themes or 'cases' such as people, organisations or processes.

The open coding process involved identifying specific broad thematic areas involved in the strategy process based on the informant narratives as adopted by Browne et al. (2012). These broad categories were informed by the ongoing review of the literature and the identified research objectives, which led to the development of lines of questioning and grouping of themes related to strategic decision-making.

When conducting open-coding, guidelines from Aaltonen (2007) were adopted, in conjunction with data reduction methods (Miles & Huberman 1994), coding procedures (Strauss & Corbin 1990), and data displays (Miles & Huberman 1994), in order for the data to become accessible, compact, focused, and organised in order to see “what is going

on” (Dougherty 2002). The full picture of the codes generated in the open-coding phase, other areas of data generation and analysis, as well as the evaluation, are contained in Appendix J.

6.6.2.5 Categorisation of Codes (Re-Ordering ‘Coding On’ And Annotations In NVivo).

The 3rd phase of data analysis involved re-ordering the open codes identified in the opening coding phase. This process is known as categorisation of codes, which involves grouping related codes under categories and sub-categories that make sense for further analysis. Thomas et al. (2008) explain that this phase of development of 'descriptive themes' remains a next level aggregation of codes into coherent themes, as opposed to a deep level of analysis. Also involved in this phase is the distilling of codes, relabelling and merging categories to ensure that labels and rules for inclusion accurately reflected coded content (Kehily, 2016). Braun & Clarke (2006, p. 20) described this phase as the “categorisation of codes”, and in this instance, the data from the 2nd phase was further coded into five broad themes, 59 sub-themes and 109 total nodes. This process led to an initial hierarchical thematic framework, as evidenced in the sample extract in Table 22, and the complete set of categories and codes in this phase have already been outlined in Appendix H.

Table 22 highlights a portion of the NVivo categorisation of codes page, showing an overview of the process of rearranging and categorisation of codes in Phase 3. Other categories from the open coding such as ‘business strategy’, ‘corporate strategy’ and ‘risk attitude’ (which were stand-alone codes under the open coding phase) have now been moved as child nodes under the significant theme ‘choice’ (see Appendix H).

Table 22 Snippet of categorisation of codes in NVivo

Name	Files	References
Business environment	27	437
Approach to strategy	11	18
Emergent	2	2
Formal	9	9
Background of strategist	16	29
Comparisons to other professions	2	3
Competitor analysis	25	88
Active	6	8
No competitor analysis	7	14
Passive	12	22
Gov't Policies	6	22
Enablers	2	2
Restrictive	6	11

These new hierarchical themes were developed based on the extensive literature review conducted in Chapters 3 and 4, making it easier to generate appropriate analytical memos. Another example of re-ordering of broad codes is seen in the code “Industry analysis-business environment”, which was a single broad code with 74 references in phase II (cf. Appendix H), and expanded to four additional child nodes in phase III. This process of categorisation involved breaking down broad nodes, conceptualising them and putting them back together in new, meaningful segments as outlined by Flick (2002).

6.6.2.6 Data Reduction/Consolidation

In this phase, data reduction was conducted via further consolidation and refining codes into a more conceptual map of a final framework of codes. Since the study adopts *thematic analysis*, the focus of this phase was on categorising theme based on frequency rather than word frequency (Boyatzis, 1998; Forsythe, 2015). Having stated that the study adopted an -‘*a priori*’ approach, the reduction of themes was based on concepts already discussed earlier in the literature, aligned with content from the quantitative stage and then merged into significant themes. The codes from the open coding phase were

condensed into five central nodes and 23 child nodes. This is a reduction from 59 sub-themes coded in phase III, which have now been either merged with similar nodes or merged as child nodes. A key example of codes that have been merged/expanded includes the business strategy node, which has been expanded to reflect different business strategy choices such as differentiation, low-cost, focus strategy and combination. Full details of merged/consolidated codes are available in Appendix I.

Appendix I also outlines the full thematic structure of the reduction in Phase 4. This data reduction paved the way to a more relevant thematic framework, from which analytical memos could be written against thematic categories and subcategories in the succeeding Phase 5. Part of the data from the data reduction phase is presented in Table 23.

Table 23 Data Reduction phase table

Nr.	Name	Files	References
1.0	Business environment	27	269
1.1	Competitor analysis	25	44
1.1.1	Active	6	8
1.1.2	No competitor analysis	7	14
1.1.3	Passive	12	22
1.2	Gov't Policies	6	9
1.2.1	Enablers	2	2
1.2.2	Restrictive	6	11
1.3	Industry analysis-Business environment	27	74
1.3.1	Environmental turbulence	15	17
1.3.2	Industry analysis - Passive	17	23
1.3.3	Industry analysis -Active	11	14
1.3.4	Nature of the business environment	18	36
1.4	Recession	24	142
1.4.1	Recession-proofing	10	11
1.4.2	Recession-Survival	22	51
1.4.3	Turnaround strategies	20	29
2.0	Choice	27	820
2.1	Business strategy	27	109
2.1.1	Combination	3	6

A preview of the structure generated in Phase 4 is included in Figure 16. In this segment,

the old categories aligned to themes such as ‘client feedback’, ‘innovation’ and ‘resource allocation’ are consolidated into the sub-theme ‘internal factors’, under the central node ‘decision-making characteristics’ (cf. Appendix I). A snapshot of Phase 4 is shown below.

Name	Files	References	Description	Created On	Created By	Modified On	Modified By
Business environment	27	269		15/06/2019 17:27	OS	06/06/2019 21:36	OS
Competitor analysis	25	44		15/06/2019 17:27	OS	17/06/2019 10:17	OS
Gov't Policies	6	9		15/06/2019 17:27	OS	04/06/2019 10:37	OS
Industry analysis-Business environment	27	74		15/06/2019 17:27	OS	04/06/2019 15:03	OS
Recession	24	142		15/06/2019 17:27	OS	06/06/2019 22:45	OS
Choice	27	869		15/06/2019 17:27	OS	06/06/2019 22:19	OS
Decision making characteristics	27	681		15/06/2019 17:27	OS	08/06/2019 12:39	OS
External-business environment related factor	21	75		15/06/2019 17:42	OS	15/06/2019 17:42	OS
Future	25	45		15/06/2019 17:27	OS	04/06/2019 15:47	OS
Internal Factors	27	443		15/06/2019 17:27	OS	15/06/2019 17:31	OS
Professionalism-Professional associations	10	52		15/06/2019 17:27	OS	18/06/2019 17:47	OS
Technology	26	66		15/06/2019 17:27	OS	04/06/2019 15:26	OS
Demographics	27	176		15/06/2019 17:27	OS	04/06/2019 16:45	OS
Approach to strategy	11	18		15/06/2019 17:27	OS	19/06/2019 13:49	OS
General company information	27	158		15/06/2019 17:51	OS	15/06/2019 17:51	OS
Strategy as practice	16	52		15/06/2019 17:27	OS	04/06/2019 16:45	OS
Practices	13	23		15/06/2019 17:27	OS	06/06/2019 21:31	OS
Practitioners	9	11		15/06/2019 17:27	OS	06/06/2019 21:31	OS
Praxis	12	18		15/06/2019 17:27	OS	06/06/2019 21:31	OS

Figure 16 Data reduction phase in NVivo

6.6.2.7 Writing Analytical Memos

In this phase, analytical memos were developed and written against the higher-level themes of the coding structure in Phase 4, in a bid to summarise the content of each category of codes and submit the empirical findings against such themes. Analytical memos were written against child nodes and some sub-themes, to summarise some of the content within them. In AM16, two analytical memos were written for the child nodes under Node Nr. 3.4 (professionalism-professional bodies) to summarise the content of each child node and expatiate empirical findings that relate to the coded content within

the theme. A portion of the analytical memo written against ‘3.4.1 Professional bodies’ in NVivo is outlined below:

AM16: This node contains contributions from participants who make reference to the professional body and its relationship with same.

The respondents seem to have a predominantly negative perception of the contributions of the professional body based on the contents of this node. Some respondents were of the opinion that professional bodies needed to provide information that is more comprehensive to their members, deeming the information disseminated to member firms insufficient.

“I did ask for information before around pricing and I was told that, if you look at RIBA in the UK, RIBA will give you all the industry pricing breakdowns for what we should be quoting. We have no idea whether we’re competitive or not and that’s disgraceful. It’s disgraceful. They should have a cost analysis done for their members who are paying every year because we don’t know what we’re paying for and we should have some guide.”- SA4

“So, I can’t at one level be expecting a lot from the professional body. Well, for example there, there was, you know, a significant change in the industry in terms of building regulations. And while the architectural institute would have done very well at communicating that and giving advice to members, the Society of Chartered Surveyors did very poorly in terms of communicating that. Also, in terms of the release of the new RCA forms and contract, very little communication and information in relation to that and much better in terms of what the architects institute make available.”-MQ1

The analytical memos written as part of phase 5 of the analysis were based on Braun & Clarke (2006)’s ‘producing the report’ phase. These memos deal with aggregating the statement in sub-themes and seeking deeper meanings in them. In addition, statements within nodes are analysed to reveal common patterns and in a coherent manner prior to deeper level of analysis. A detailed analysis of AM16 is outlined in Appendix K.

6.6.2.8 Validating Analytical Memos

The validation of analytical memos is a critical phase in the qualitative analysis process, as it entails searching for confirming and disconfirming examples, and filling in

categories that need further refinement and development (Strauss & Corbin, 1990). Yin (2003) suggests four tests for conducting validity testing in qualitative studies and these are: construct validity, internal validity, external validity and reliability testing. Table 24 shows how the validation process recommended by Yin (2003) was adapted to the study.

Table 24 Yin (2003)'s data validity process (cited in Seriki, 2007)

Type of validity test	Criteria (relative to this study)	Status
Construct validity (allows for the establishment of correct operational measures for the concepts being studied)	Use multiple sources of information	√
	Establish a chain of evidence	√
	Have key informants review validated draft report	√
Internal validity (allows for building causal relationships or linkages/comparisons between memos)	Conduct pattern matching	√
	Build up an explanation from emerging patterns	√
	Address conflicting explanations	√
	Show logic/Use logic models	X
External validity (establishing the domain within which the findings can be generalised)	Can findings be generalised across all three professions (using replication logic since study examines multiple professions)?	√
Reliability (demonstrating that findings within the study can be replicated)	Use case profiles/case protocols and searchable database	√

The validation of analytical memos in phase 6 of the qualitative stage to meet research best practices is highlighted in Table 24. The internal validity process involving the use of logic models was not undertaken as this will require exploring causality and outcomes (linked to performance) which is not the objective of the study. Using further evidence from the analytical memo written against ‘3.4.1 Professional bodies’ (AM16), a sample of the construct validation process for this nodes is outlined in the next sub-headings:

Construct validity

Construct: insufficient support from professional bodies

Key validation metrics in this example: Use multiple sources of information,

establishing chain of evidence.

Compliance: The construct was developed based on three different sources of information, with a chain of evidence presented in support (see Analytical memo 16 extract)

AM16:

A number of participants mention that the professional bodies are performing below par when it comes to provision of information and relevant assistance that allows firms be more competitive. Some of the responses are shown below:

"People can only be effectively doing what you call below cost selling because the fees that they are seeking are way too low so that's a big problem. In fact, the clients recognise it as a problem and we have been trying to work with the RIAI with coming up with mechanisms that would perhaps help get over that type of behaviour"- LA1

"I could go on, there is a lot of work the RIAI needs to do on regulating the sector more because we spent, yeah... Yes, they're not hands on" - SA4

"Yeah, well I'd be a bit disappointed with what we get from the SCSL, equally you can say well 'what are you doing to participate in that yourself?' "- MQ1

The aim of showing the construct validation process is to outline how the propositions of Yin (2003) for validation of qualitative data was adopted in the study.

6.6.2.9 Synthesising Analytical Memos And Writing Up.

This final phase brings together the findings from the previous phases into a more developed version and a possible framework for analysis. At this stage, findings within each category were distilled into summary statements or concepts, which can be easily understood and disseminated. The memo statements that were written against the theme '3.4.1 Professional bodies' is included in Appendix K. The data from analytical memos are summarised under this phase and summarised to ease cognition. Only one example is

shown in Appendix K due to space constraints.

The next section deals with ethical considerations in the study.

6.7 Research Ethics

Due to the nature of research into strategy, researchers must pay attention to the ethical as well as practical issues involved in strategy research. These issues include the nature of the data gathered, confidentiality guidelines, and ethical guidelines that need to be agreed before commencing the research (Balogun et al., 2003). Reynolds et al. (2010) also outlined that researchers needed to pay attention to ethical guidelines when conducting research. Ethical considerations are a critical part of the execution of the research process, and they ensure the process is carried out morally and responsibly, such that the rights of research subjects and those who are affected by it are preserved (Saunders et al., 2009).

Several ethical considerations that may arise during research, outlining the need for the researcher to identify and address the following concerns: informed consent, possible harm to participants, invasion of privacy, and deception (Bryman, 2012). Okumus et al. (2007) also outlined that carrying out research may also disrupt and/or impact on working practices and may affect employees in their typical working environment, having ethical consequences. Hence, these considerations and other aspects of data protection and privacy were taken into account when planning and conducting research activities for this thesis.

This study complied with all required institutional ethical approval process that is required by the Technological University Dublin. Institutional approval was gained to

commence the investigation from the Ethics Research Committee and received the necessary ethical approval (See Appendix D). In the data collection stage, informed consent was obtained from participants, and the survey stated the voluntary nature of participation explicitly, with respondents put under no obligation to participate or complete the survey as recommended by Duncombe and Jessop (2002). The consent forms used in the study is attached in Appendix F.

Another critical area of ethical consideration is the anonymity of respondents and the confidentiality of data throughout the research and ensured that responses were anonymised as recommended by Saunders (2012). The wording of the consent page of the survey carefully addressed respondents' concerns about privacy, but care was taken to prevent partial response or survey abandonment due to concerns about how the data may be used (Manfeda and Vehovar, 2008). Besides, the consent page dispelled the possibility of assumed compulsion to complete the survey by expressing the right of respondents to withdraw at any stage of the research (Zikmund, 2003). A copy of the consent page of the online survey is included in Appendix F. In the next section, the process employed in ensuring the reliability of the data collected and its process of analysis is detailed.

6.8 Data Reliability

Within a research project of this magnitude, accuracy in the data collection and analysis stage is of utmost importance. Cohen, Manion & Morrison (2011) stressed that researchers must not only pay attention to the integrity of the research participants, but also the data collected. The steps taken to ensure data reliability are outlined in table 25:

Table 25 Steps to ensure reliability of findings

Step taken	Details	Related author
Adopting mixed-methods	This helps in triangulating findings from two strands of research before reaching conclusions.	Murphy (2011)
Uniform Likert Scale metrics	Likert scale kept constant (Strongly Agree to Strongly Disagree)	Yang (2012)
Pilot testing	The pilot test was carried out as an additional reliability layer to ascertain the clarity and comprehensiveness of the questionnaire.	Oyewobi, Windapo & Rotimi (2017)
Adopting sizeable sample size	The sample size was reflective of the entire population of PSFs in Ireland	Srivastava & Sushil (2013)
Detailing findings	This prevents destroying the integrity of individual responses	Walsh & Downe (2005)
Using multiple, different sources of data	This involved triangulating data from semi-structured interviews using data from the online survey questionnaire	Hinkelmann (2012)
Satisfying Denscombe (2010) criteria for validity	This criterion states that the questionnaire administered may be used in different settings, or different researchers, with the same people at different times, or with separate groups of similar people at the same time	Denscombe (2010)

This seven-step reliability criterion in Table 25 provided evidence of the rigour in the approach to the study. A summary of the methodology chapter is presented.

6.9 Methodological Limitations

As expected, there are limitations to the methodology adopted in this study. First among these relates to the challenges associated with non-adoption of extensive statistical analysis and hypothesis testing. Despite the scales employed in this study being suitably reliable and sufficient for an exploratory study, further statistical analysis involving testing of hypothesis could have provided more information about causality. Future efforts should focus on the further development of statistical tests for assessing the effect of one strategy variable on the overall decision-making process.

Another limitation in the qualitative stage of the study is that the process of collecting data, transcription, and analysis of interviews are time consuming, especially when the respondents are distributed across various geographical locations (Bailey, 2008). As a

result, the researcher could only conduct interviews across a small sample of respondents (Bell, 2005). The effects of this limitation was reduced as the study adopted respondents from the key economic hubs in the country (Dublin and Cork).

A third methodological limitation of the study relates to the difficulty of quantifying the thematic dimensions related to the knowledge acquisition process, and indeed the overall intangibility in the decision-making process. Future research might benefit from the introduction of focus groups and ethnographic studies, which can provide more insights and develop more indicative measures for measuring intangible factors in decision-making.

The next section will now summarise the entire methodology chapter, as a precursor the analysis of data.

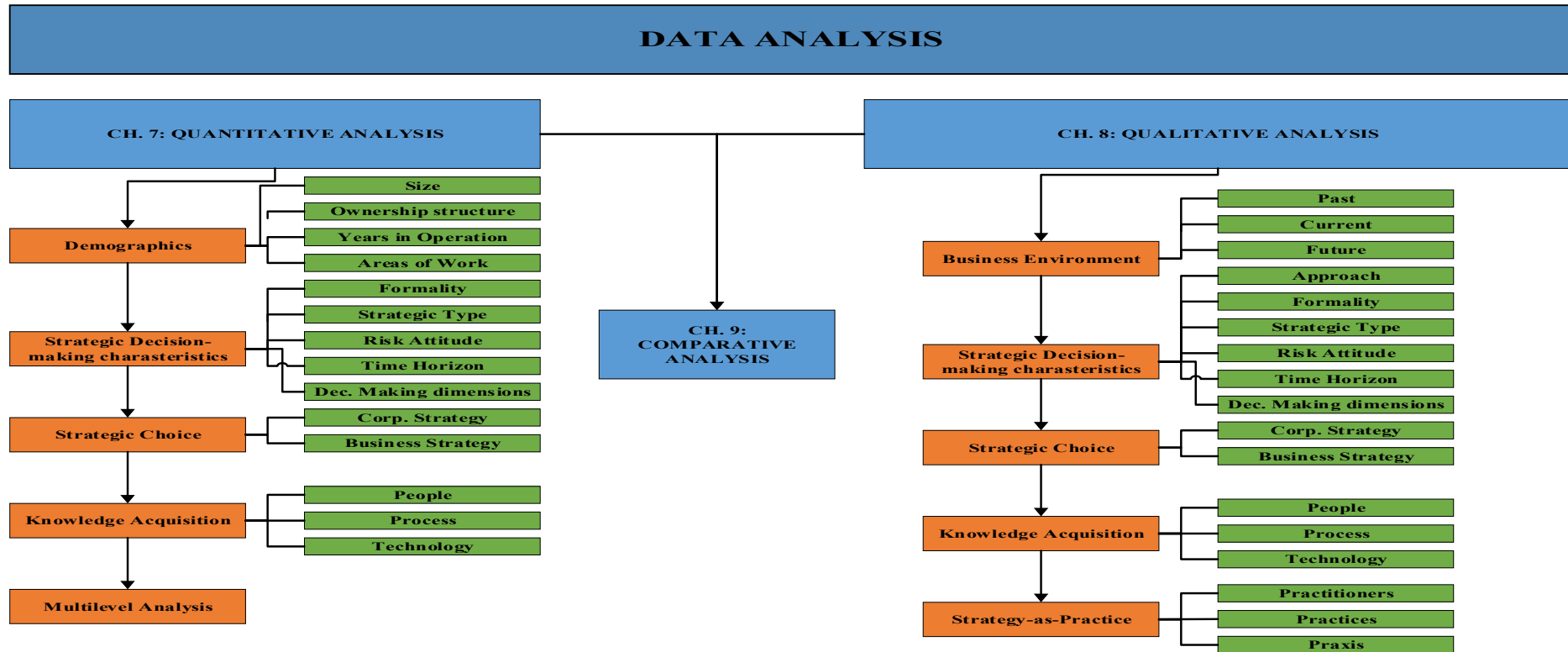
6.10 Summary

This chapter set out to outline the chosen methodology adopted in the study, highlighting key sections in the methodology chapter and these are outlined below:

- Research purpose: *Exploratory*
- Research Philosophy: *Pragmatism*
- Research Approach: *Abductive*
- Research Strategy: *Survey*
- Research choice/Method: *Mixed Methods*
- Time Horizon: *Cross-sectional*

Having explored the research methodology, the next chapters provide a detailed account of the data analysis/discussion of the findings from both stages of the study.

PART IV: DATA ANALYSIS AND DISCUSSION OF FINDINGS



7. QUANTITATIVE DATA ANALYSIS AND DISCUSSION

7.1 Introduction

This chapter presents an analysis of data obtained via the online survey and uses the findings for conducting a comparison between the three professions under consideration, namely AES. It provides an opportunity for comparison across the professions that work in close collaboration in the delivery of construction projects. This is the largest known Irish AES study of its kind, with 225 total valid responses across construction AES practices in Ireland. This represents an average response rate of 27% across these professions. Figure 17 outlines the breakdown of the quantitative stage of the study, and the analysis provide within this chapter broadly follows this structure.

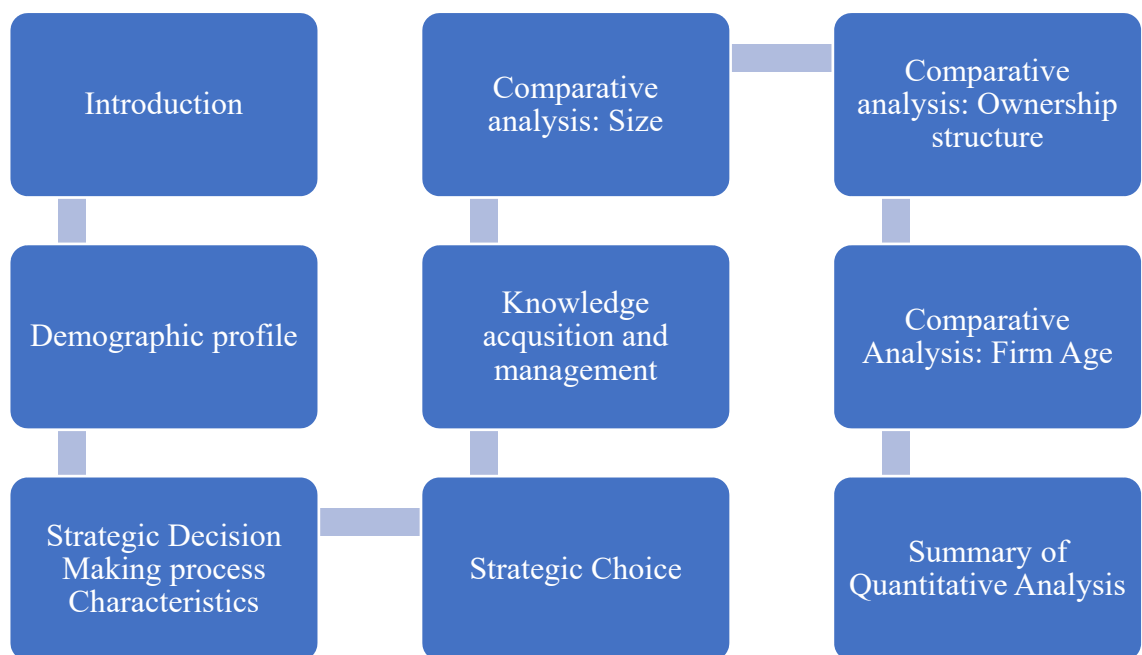


Figure 17 Map of the quantitative analysis stage of the study

In analysing the quantitative data, descriptive statistics (including percentages and mean scores) were used to analyse the background information of the respondents and make deductions based on same. Inferential statistics was not adopted due to the following

reasons:

1. There is no initial benchmark for cross professional analysis within the body of knowledge in strategic decision making in Ireland. Previous studies have been focused on individual professions and are dated, making this study a foundational one within this area in Ireland. In addition, the research purpose is exploratory and does not seek to explain abstractions or seek correlations (Kumar, 2005).

2. Descriptive research allows for capturing data from the ‘population of interest’ on a certain phenomenon (strategic decision-making in this case), whom the researcher is interested in a typically at a single point in time (Kelley et al., 2003). Descriptive statistics allow the examination of the situation by describing important parts of considerable amount of data from the main population.

3. For questions that included Likert scales, the descriptive ranking method put forward by Sambasivan et al. (2017) was adopted, as it helps to identify relationships only, but does not explore causality. Inferential statistical tests also evaluate the significance of the relationship between two variables (e.g. strategic decision-making & performance) and the strength of the relationship (Allua & Thompson, 2009). This falls outside the aim of the study.

4. The pragmatic philosophical worldview of the research seeks to ‘..focus on problems, practices and relevance’ (Saunders et al., 2015). Hence, there is a need to focus on actionable data, directed at solving problems and informing future practice instead of rigorous statistical abstractions which is characteristic of inferential analysis.

The main analysis is undertaken, first on an individual profession basis, following which a comparative analysis is undertaken across the three professions. Data is rounded to the

nearest whole number or one decimal place for ease of analysis. A rigorous multi-level analysis across the three professions was further undertaken, focusing on similarities, dissimilarities and patterns emerging from the data, with implications for practice noted.

7.2 Demographic Data

7.2.1 Company Size, Ownership Structure and Years in Operation

The RIAI, ACEI and SCSI supported the research. The surveys across all three professions recorded 225 responses. The data related to company size, ownership structure and number of years in operation is outlined in Table 26.

Table 26 Demography of respondents' organisations

	ARCH Firms	% response	ENG Firms	% response	QS Firms	% response
Respondent profile						
M.D/ CEO	73	63%	34	79%	49	74%
Director	36	31%	9	21%	13	20%
Assoc. director	5	4%	0	0%	3	4.5%
Senior QS	2	2%	0	0%	1	1.5%
Number of employees						
Small (< 10)	90	78%	17	40%	54	82%
Medium (11-49)	22	19%	13	30%	6	9%
Large (>50)	4	3%	13	30%	6	9%
Years of operation						
1-5 years	23	20%	2	5%	7	10.5%
6-10 years	16	14%	6	14%	17	26%
11-15 years	14	12%	4	9%	8	12%
16-20 years	11	9%	0	0%	3	4.5%
> 20 years	52	45%	31	72%	31	47%
Ownership structure						
Sole Pract.	31	27%	4	9%	26	39%
Partnership	8	7%	16	37%	4	6%
PLC	1	0.8%	8	19%	23	35%
Part of G.C	0	0%	3	7%	4	6%
Private L.C	76	65.2%	12	28%	9	14%

The data presented in Table 26 highlights that the majority of survey respondents hold senior management positions, fulfilling the requirements recommended by Ragab (2015)

on the need for senior managers to be drafted as the natural choice for studies on strategy research, due to their expertise in handling people and the higher likelihood that they would have prior experience with same.

The table further shows that a significant proportion of firms fall under the SME category, addressing the current limitation arising from concentration on large firms in existing studies thus further contributing to the novelty of the study.

Another significant finding is that more 40% of the respondent firms had been in the construction business for more than 20 years (i.e. 45% ARCH, 72% ENG, 47% QS). Thus, these firms have been in existence before the recession hit, possessing considerable experience and knowledge through different economic cycles.

Table 26 also confirms that ownership structure varies across all three professions. Private limited companies are the largest group in respondents under the architectural profession, a divergence from the study conducted by Flemming (2011), who reported that sole trader firms were the largest category in the industry in terms of ownership. This suggests that the demographics have changed considerably as private limited companies now take up a larger share of the respondents' population than what was recorded in the earlier study. The reason for this may be that in 2011, which was in the peak of the recession, massive job losses meant that several professionals had to resort to sole proprietorship in order to stay practising. The change in ownership structure may suggest improved economic outlook and more job security within the Irish construction sector.

In consulting engineering practices, partnerships are the largest group in terms of ownership structure. In the QS practice category, sole proprietorships are the largest respondent groups, which aligns with the findings of Murphy (2011), who stated that majority of QS firms in Ireland are sole-proprietorships. Sha (2011) explained that the

ownership structure of a firm was critical to decision-making, particularly in construction firms, as it influences how information is transferred within the management of the company and can affect the speed of decision-making. Firms with more complex ownership structures may be less agile in taking strategic decisions.

The ownership structure also provides an opportunity for comparison across the professions that work in close collaboration in the delivery of construction projects. This is adopted as a moderating factor for exploring the decision-making process later in the study.

The sectors within construction which the firms in the study work is important in understanding the strategic decision-making process, as it allows a critical review of the main areas of work and the how they impact strategising in these firms.

7.2.2 Sectors Serviced and Services Provided

This section provides an analysis of the sectors in which the respondent firms work across each profession, with comparisons made across professions.

7.2.2.1 Architectural practices

The overwhelming majority of architecture participants undertake work within the residential sector, which supports national evidence by the CSO that the residential sector is a key driver of growth within construction in Ireland (Euro Construct, 2018). The next highest-ranked sector is the private non-residential sector, in which more than 75% of all respondents also work, and again, supports the nationally available data pertaining the demand for official and industrial construction driven to a large degree by FDI. A key statistic is the proportion of firms working in conservation, which highlights that the industry is currently developing expertise or experiencing demand in that field, in line with government policy on climate change and reducing CO₂ emissions. In the “other”

sector, areas of work outlined by firms include exhibition design, Nursing Homes, Industrial, Hotels and Leisure facilities, Cemetery, Heritage Research, Legal documentation and assigned certifier work, Master planning/Feasibility Studies, and Interior Design. A possible explanation for the highly diverse nature of service offerings may be the improved business climate in the industry. Further details in Table 27.

Table 27 Areas of work in Architectural Practices

Answer Choices	Percentage (%)
Residential (private / public)	95%
Private non-residential (offices, shops)	76%
Public non-residential (schools, hospitals)	45%
Conservation	62%
Social / community buildings	42%
Other (please specify)	24%

The services offered by architectural firms are contained in Table 28. The major work areas of the firms are planning permission assistance, design service/brief development and building contract administration/project management. The service offerings least offered by the respondent firms are building energy audit ratings and the “other” category (which includes Health & Safety, Expert Witness and Adjudication, Alternative dispute resolution and Master planning/Heritage Research).

Table 28 outlines the data demonstrating the intangible nature of services offered by architectural firms, as most of the areas where the firms in the study work are service focused, requiring high level of professional knowledge and client interaction, in line with the assertion of Lowendahl (2002) about professional service firms.

Table 28 Architectural practices: services offered

Service offerings	Responses
Design service / Brief development	97%
Planning permission assistance	98%

Building contract administration & Project management	95%
Project Management	62%
Project co-ordination i.e. co-ordination of other project participants	79%
Building surveys, specialist skills and services	52%
Conservation and protected structures	72%
Building energy ratings audits	11%
Interior Design	59%
Urban Design	39%
Sustainable Design and certification	23%
BIM	34%
Development Consultancy / Feasibility studies	71%
Assigned and design certifier	86%
Ancillary Certifier	59%
Landscape design	18%
Other (please specify)	16%

In order to contextualise the service offerings (-and possible changes thereof) post-recovery, 64% of respondents suggested that they have increased their service offerings within the last 5 years. A tenth of respondents reduced their service offerings over the time period, while 26% of respondents report no changes in the service offerings since the onset of the recovery. It is essential that they offer a vast range of services, and it can be surmised that the range of services has changed due to environmental turbulence. Furthermore, these findings are important for benchmarking the current study against earlier studies and observe possible changes that have occurred over that period.

7.2.2.2 Consulting Engineering Firms

Consulting engineering firms differ from architectural practices in their areas of work, as *private non-residential work* (i.e. offices, retail and industrial) dominates within this group of responses. This is not unexpected as consulting engineering firms are demanded for structural/civil engineering projects more so than in domestic residential work.

The data in Table 29 also points to a focus on public non-residential projects, which ranks

second, while residential buildings comes third. In the “others” category, areas of work like Waste/Energy Facilities, Traffic & Transportation, Power, Transmission & Distribution, Oil & Gas, Industrial, Sports & Recreational projects and Renewables are mentioned. Interestingly, only 56% of consulting engineering firms work in productive infrastructure (civils) as the market for this is very limited given that the clients are usually the public sector, i.e. civil engineering/infrastructure projects, which are usually government-led.

Table 29 Consulting Engineering firms: Areas of work

Areas of work	Percentage (%)
Residential (private / public)	81%
Private non-residential (offices, retail, industrial)	91%
Public non-residential (schools, hospitals)	88%
Productive infrastructure (civil, water services)	56%
Social/community buildings	72%
Other (please specify)	35%

The main service offerings provided is presented in Table 30. Engineering design appears to still take precedence over other forms of service offerings, while the least area of service offerings is the ‘*other*’ section which encompasses renewable energy, legal services, conveyancing, mapping, asset management, and LEED/BREEAM Certification, demonstrating the increasing opportunities in the area of sustainability.

Table 30 Consulting Engineering firms: Services Offered

Service offerings	Responses
Engineering design	95%
Value Management (Cost Control and Value Engineering)	44%
PSDP	77%
Project Management	65%
Arbitration & Mediation	23%
Assigned Certifier	53%
Project supervision, scheduling and programming (project controls)	30%

Sustainability advice (Life cycle costing, life cycle analysis and energy efficiency)	35%
Civil & Structural Engineering	74%
Health and Safety Engineering	40%
Forensic Engineering	21%
Traffic & Transportation Engineering	33%
Fire Engineering	21%
Mechanical & Electrical Engineering	33%
Water & Wastewater Engineering	40%
Environmental Engineering	28%
Geotechnical Engineering	21%
Building Services Engineering	33%
Other (please specify)	9%

Similar to architectural practices, 60% of consulting engineering firms indicate that they increased their firm’s service offerings within the last five (5) years, while 33% have not changed their service offerings at all. Only 7% of respondents report a reduction in their service offerings in the last five years. Once again, the impact of the economic environment within which these professionals operate has a significant impact on the type of services provided.

7.2.2.3 Quantity Surveying Practices

The sectors serviced by QS firms is similar to that of the architectural practices as can be seen from Table 31.

A significant proportion of QS practices work within in the residential sector (74%), and private non-residential sector (64%), strikingly similar to the proportions observed in architectural practices. The sector where QS firms work the least is productive infrastructure sector, followed by the “others” category, which includes hotels, commercial and production facilities, historic / restoration projects, pharma and data, centres. This could be because this study examined PQS firms as contractor QS’s could produce a different work profile.

Table 31 QS Firms: Areas of work

Answer Choices	Responses
Residential (Private/public)	74%
Private non-residential (office, rental)	64%
Productive infrastructure (roads, civil)	21%
Social infrastructure (healthcare, education)	56%
Other (please specify)	29%

The data from Table 32 demonstrates, perhaps unsurprisingly, that traditional QS services are the primary services offered, while health & safety auditing is the least offered service. In the “others” category, BIM consultancy services, Mapping & Professional Witness, and tax/capital allowance are some of the additional services offered. This data supports the earlier proposition about the knowledge based services offered by PSFs, reinforcing the difference of these firms from contracting firms. Contracting firms are more product oriented (i.e. the final output is the building/infrastructure/project), different from PSFs. Another important area is insurance claims, wherein 47% of respondents say they are involved in them. This could be as a result of projects undertaken during the downturn (perhaps below cost) now going through litigation or arbitration.

Table 32 QS Firms: Service Offerings

Answer Choices	Responses
Traditional Quantity Surveying	97%
Value Management (Cost Control and Value Engineering)	76%
Project Management	52%
Building surveying	14%
Dispute Resolution (Arbitration, Conciliation, Litigation, Expert Advice)	36%
Procurement Advice (Procurement, Contracts and Tendering)	76%

Bank Monitoring	32%
Project Scheduling and Programming (Project Controls)	29%
Sustainability Advice (Life Cycle Costing, Life Cycle Analysis and Energy Efficiency)	21%
Insurance Claims and Reinstatement Valuations	47%
Health and Safety Auditing and Advice	5%
Other (please specify)	11%

The QS firms were also asked about the changes in their service offerings like other professions, but this time, QS firms had 77% of their respondents highlighting that they have had not changed the range of services over the last five years. This discrepancy could be attributed to the fact that a large proportion of respondents are sole proprietorships (cf. Table 26), thus less likely to change. The remaining firms (23%) who claimed to have witnessed changes in their service offerings provided more insights into their answer, and this is outlined in Figure 18 using Ansoff's (1957) four basic growth alternatives, which are increased market penetration, market development, product-development, and diversification. Ansoff's four growth alternatives are used for exploring how firms have developed or changed their strategic options (Liu, 2012), and in this study, the time period considered is between the end of the recession (2013) and the period of return to growth.

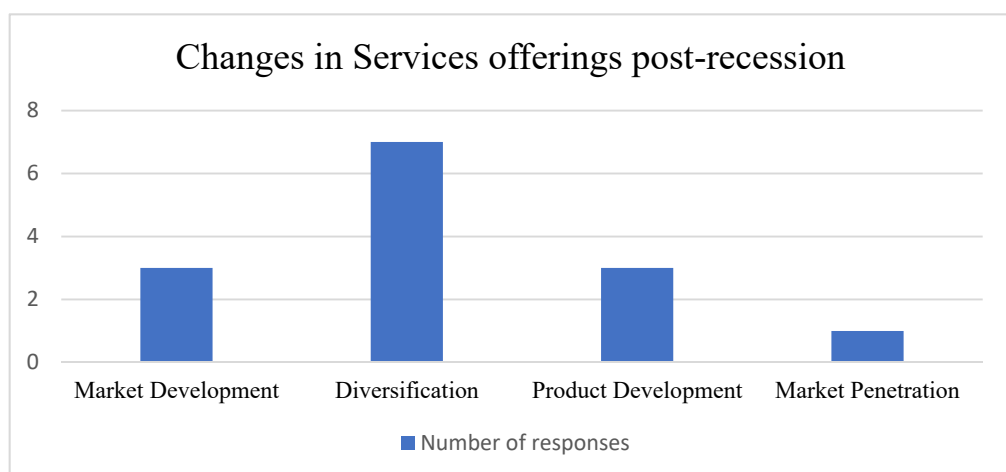


Figure 18 Changes in QS service offerings

From Figure 18, most of the QS firms in the study appear to have either diversified their service offerings or have developed new products to capture more market share. It is important to note, however, that some of the comments on diversification align more with the focus strategy of Porter (1986), rather than Ansoff's. Some firms reduced their service offerings in some areas and explored other markets with possible higher profit potential. Product development (service in the case of PSFs) and market development ranked second highest cited change witnessed by QS firms. Firms have to either develop new products or develop the market to meet with changing client requirements and industry trends.

The least ranked alternative is increased market penetration, and the reasons why it is not fully explored may be due to two reasons. One, due to the abundance of work in the QS sector within Ireland, firms have more work at hand than needed; hence, they may not need to penetrate markets further. In light of the acute skills shortage reported in the QS sector (Murphy, 2018), the second reason for the lesser emphasis on new market preparation may be as a result of the aftermath of the deep recession of 2008-2011. Murphy (2011) reported that many firms downsized during the recession, and they may, in turn, be unwilling to take on more risk than needed via increased market penetration. In subsequent sections, these hypotheses may be strengthened or refuted, based on additional information.

From the analysis in this sub-section, the following conclusions can be drawn:

- ARCH and QS firms are alike in terms of their areas of work (focused primarily involved in residential sector). ENG firms are predominantly engaged in the private non-residential sector, differing from architects and quantity surveyors.
- ARCH and ENG firms have a higher proportion (>60%) of those who have

increased their service offerings in the last five years, while less than a third of QS firms have recorded any changes in service offerings.

- The three professions focus on core/traditional service offerings primarily, however there is increasing emphasis on sustainability related themes/projects.

The organisation demographic profile of respondent firms presented provides a crucial backdrop when analysing the strategic decision making process across the professions under scrutiny.

7.3 Strategic Decision-Making Characteristics

Strategic decision-making is a complex process that varies from one organisation to the next. The heterogeneous nature of the strategic decision making process is analysed in earlier chapters, however an opportunity now exists to appraise these characteristics across three professions operating within a complex sector such as construction. The AES professions are required to collaborate for the effective delivery of construction projects, (often costing significant sums of money), yet to date, there remains limited knowledge pertaining to the strategic decision making process of each of the three stakeholders.

The following section addresses this perceptible gap in knowledge.

7.3.1 Formality of Planning Process and Approach to Strategy

The formality and approach to strategic decision making are crucial characteristics of the process and may ultimately influence the strategic choices made by a firm. The former examines the structured components within the process (i.e. components/content) of strategic plan, while the latter explores the method adopted to achieve the former (i.e. planned or emergent).

7.3.1.1 Formality of Planning

A formal strategic plan implies a deliberate means to include factors and techniques in a systematic way to achieve specified tasks (O'Regan & Ghobadian, 2002). Earlier evidence from Murphy (2011) found that PSFs who had a form of strategy sometimes did not have a formal/written plan in place. This section sought information about whether the firms in question had a written plan in place for decision-making.

Table 33 Formality of planning process

Metrics	ARCH	ENG	QS
Written strategic plan	27%	45%	16%
Mission statement	57%	68%	-
Corporate objectives	37%	62%	-
Company vision statement	46%	54%	-
ISO Certification	64%	64%	-
Strategy tools	17%	46%	-
Annual financial plan	57%	69%	-

From Table 33, the evidence shows that the majority of the firms surveyed do not have a written strategic plan in place within their company. Within QS firms, only 16% of QS firms have a written plan, lesser than the proportion reported by Murphy (2011), suggesting a decreased emphasis on written plans. The fact that many of these firms have significant proportion of other process formality elements in place, i.e. strategy tools, ISO certification, and yet do not have a written plan is a critical finding, the explanation for which was inconclusive from the quantitative phase, but investigated in more detail in the qualitative phase of research.

The absence of data from QS firms about other contents of their planning content (e.g.

mission statement, vision etc.) results from the questionnaire being updated with this information after the first survey (i.e. QS survey). Hence, data for these firms is unavailable for comparison. However, a notable finding is that consulting engineering practices tend to have more formal process in place, as opposed to architectural practices. Consulting engineering firms have the highest number of respondents who have a formal, written strategic plan in place within them. The implication is that you are twice more likely to find an engineering firm with a written firm than either an architectural or QS practice. George (2016) outlines that there is limited evidence in the literature that supports a plea for higher formality within firms, with little evidence identified for linking formality to feasibility/actualisation of proposed strategies.

The degree of formality in strategic decision-making may be influenced by the approach taken to the process, which is the focus of the following section.

7.3.1.2 Approach to strategy

The importance of the approach taken to strategy has been noted previously, and Table 34 illustrates the approach taken by the three PSFs in question. Survey participants were asked to identify with a statement that best described their approach to strategic decision making, which were closely aligned to the planned or emergent approach (Brews & Hunt, 1999), technology-driven (Stewart, 2000), and resource-driven approaches (Grant, 2003).

Table 34 Approach to strategy by AES practices

S/N	Answer Choices	ARCH (%)	ENG (%)	QS (%)
1.	Planned	18%	29%	34%
2.	Emergent	56%	61%	54%
3.	Internal Resource dependent	22%	10%	11%
4.	Technological driven	4%	0%	1%

Across all professions, the emergent form of strategy is the dominant approach adopted (ARCH- 56%, CE- 61%, QS- 54%). This finding in QS firms deviates slightly from the findings of Murphy (2011), whose study found the planned approach was predominant among QS firms. For architectural and consulting engineering firms, there is no known previous study in this regard, thus it is a novel discovery.

Ring and Perry (1985) notes that the benefits of the emergent approach to strategic decision making allow for organisations to be more responsive to the needs or demands of their constituents (clients in this case), outlining that firms undertaking the emergent approach are likely to be more effective than rigidly planned ones. There are several arguments for and against the emergent form of strategy, with some authors arguing that the approach to strategy should be a combination of both deliberate and emergent approaches, otherwise known as collaborative strategies (Clarke & Fuller, 2010). Bouhali et al. (2015) also added that organisations must become flexible, as they continually adapt plans to meet emergent, even, ambiguous situations within the business environments. This is especially important in construction markets where client demands are continually changing and business environments growing increasingly turbulent.

Going back to Table 34, the second highest ranked approach the deliberate/planned approach with the exception of architectural practices, where the internal resource dependent approach is adopted. The divergence in architectural firms confirms the position of Charest et al. (2016), who noted that not all strategies can be delineated into the deliberate and emergent streams of Mintzberg and Waters (1985), adding that strategies can also be prescribed, or creative based. The inclusion of the two extra categories in this study (i.e. internal resource-driven and technology-driven approaches) stems from the proposition of Chia and Rasche (2011) that a strategy can emerge from

unintentional actions (internal resource availability or technology in this case). Thus, the justification for introducing these two extra categories that are relevant to the construction sector is laid out, since these factors, although non-intentional, may end up as being strategic.

The technology-driven approach is the least path taken across all PSFs, and this poses as an outlier in this study. Although PSFs are becoming increasingly dependent on technology, it hardly influences the approach they take to strategy. This is a noteworthy finding given the global call for use of technology to improve productivity and efficiency within the construction sector (Farmer, 2016). The reason why a firm chooses to engage a kind of approach to strategy could differ based on firm size (small, medium and large enterprise) or the number of years of existence among other factors. Thus, the impact of technology on the approach of PSFs to strategy is investigated in more detail in the qualitative stage of the study. Aside the approach, there are other issues that influence the decision-making process that is examined later in the study.

Miles and Snow (1978) posit that a firm's approach to strategy will have an impact on the formality of the process, and they named these approaches “strategic types”. With the findings suggesting that PSFs are predominantly emergent in their approach to strategy, the next section will explore how the unique characteristics of strategists (i.e. strategic typologies) influence the approach and formality, thus the overall impact on the strategic decision making process.

7.3.2 Strategic Type

Miles and Snow (1978) postulated four behavioural patterns exhibited by strategists within firms namely: prospector, analyser, defender and reactor. Respondents were asked to identify with a statement that best described their strategic type, which were based on

Miles and Snow (1978) typologies. Table 35 presents findings in this regard which clearly demonstrate the concentration on the reactor type across professions, with the exception of consulting engineering firms who have an equal tally of reactors and defender firms. Tan et al (2012) explained that reactors lack adaptive capability, due to inability to develop mechanisms to sense and respond to changes in the market. Table 35 outlines the distribution of firms along strategic typologies. Reactor firms are vulnerable to the dangers posed by environmental pressure and are often late to change (Brunk, 2003), exposing them to the risk of subpar performance in the industry. Scott (2009) also outlines that reactor firms often have no defined strategy (linked to the lack of a written strategic plan), but rather address strategic issues as they come, further validating the finding in the previous section about the emergent approach of CPSFs to strategy. García-Pérez et al. (2014) outlined that reactor firms would likely record worse strategic outcomes than analysers, defenders and prospectors. However, it is important to reiterate that measuring strategic outcomes is outside the scope of the study.

Table 35 Strategic types of AES firms

Miles & Snow Typologies	ARCH	ENG	QS
Prospectors	10%	7%	17%
Defenders	26%	41%	15%
Analysers	28%	11%	29%
Reactors	36%	41%	39%

From the Table 35, consulting engineering firms have the same number of reactors and defender firms, and defender firms are always seeking ways of defending current market share in some sectors, while exploring promising opportunities in others after a careful review of the market (Murphy, 2011). Sherman et al. (2007) also affirm that reactors are

last movers, who employ a “copycat approach” and only act when others are acting or have acted. That majority of the firms in the industry are reactors is worrying, as they tend to be disadvantaged over the long-term as they may be forced to occupy inferior and less profitable markets or niches that have been abandoned by analysers, defenders and prospectors.

The second-highest ranked category across all professions is the analyser firms, who are able to maintain a stable domain where they can operate with relative efficiency, while trying to identify emerging opportunities through market scanning and research (Tan et al., 2012). These firms may succeed better on new product/service offerings because they arrive late to the market, and are able to observe and learn from the problems encountered by other firms (Miles and Cameron 1982). Scott (2009) espoused that analysers are usually unwilling to enter markets in which they have little information and no experience. This is true for Irish firms who are not prone to much internationalisation, with their primary focus being UK markets. Parnell et al. (2015) outline that analyser firms create a firm foundation based on efficiency, but continue to pursue incremental innovation through flexibility. Thus, they rather focus on internal efficiency, using resources at hand to deliver on current targets, while studying the market for possibilities for expansion into related areas. It is therefore no surprise that Irish firms are ranked as one of the most innovative firms in the world (World Intellectual Property Organisation, 2019).

Miles & Snow (1978) warn that defenders cannot adapt easily to change, and it is unlikely that they notice market change or adapt to it even if it is noticed. While approximately one quarter of architectural firms (26%) fall into the defender category, only 15% of QS firms select this option. The defender category is split across all three professions, tied

at 1st in consulting engineering firms, 3rd in architectural practices and 4th in QS firms. This highlights the increased divergence in strategic types across all three professions. While defenders may review the market and conduct external analysis, they seek ways of defending their current market share in some sectors, while exploring promising opportunities in others. Only consulting engineers profession having a high number of defenders should be an issue of concern, as the other professions have less than a third of their population in this category (cf. Table 35). Being defenders means they will emphasise cost control in stable environments, concentrating their efforts on internal process issues, rather than external (Parnell et al., 2015). This cost control may be due to the low fee potential being charged across consulting engineering practices, which warrants further enquiry in the qualitative stage.

Prospector firms are least ranked across architectural and engineering firms, but ranked 3rd within QS firms. Miles & Snow (1978) argue that prospectors are always in search for market opportunities, conducting regular experiments with responses to emerging environmental trends. Sherman et al. (2007) also stressed that the strength of prospectors lies in being the first mover or pioneer into new markets regardless of possible profitability. They seek to find new opportunities in the existing market or explore new markets via offering new services. These firms are vulnerable to environmental changes and are likely to be at risk during environmental jolts or shocks. Gosselin (1997) also showed that firms pursuing prospector typologies often adopt more activity-based techniques than their analyser and defenders counterparts do. Seeing the limited number of prospector firms within PSFs in Ireland highlights several possible explanations. First, it may mean that firms in the industry are not exploring new market opportunities as much as they could. Otherwise, it could also mean that the current growth in the Irish

construction market is keeping demand strong enough for firms not to be bothered about prospecting for more work outside of their current clientele. Additionally, PSFs may be considering risks involved in becoming prospector firms, which ties in with the risk attitude of the main strategists in the firms. Calls for innovation and new ways of construction will require firms to move from being analysers to prospectors, in order to explore new markets and innovative service offerings.

While the examination of the strategic type yields crucially important insight, it cannot be analysed in isolation. The question arises as to why one strategic type dominates over another, and it may be influenced by the risk attitude. The differing positions of managers relative to risk affects decision-making, and this is now explored in the following section.

7.3.3 Risk Attitude

A clear distinction needs to be made between the risk attitudes of strategists within firms as it has the potential to impact on the decision-making process. Ingram & Thompson (2012) proposed four risk attitudes: *pragmatists*, *conservators*, *maximisers*, and *managers*.

Table 36 Attitudes to Risk of AES firms

Answer Choices		ARCH	ENG	QS
Our company embraces projects with potentially high risk, but with potential to reach corporate objectives (Maximisers)		5%	36%	26%
We believe it is best to explore opportunities gradually via incremental behaviour (Managers)	Risk Seeking	86%	33%	48%
We have an affinity towards low-risk projects (Conservators)		7%	29%	18%
We adopt a cautious “wait & see” approach (Pragmatists)	Risk Averse	2%	2%	8%

The data presented in Table 36 above shows that CPSFs are predominantly risk seeking,

as most of the firms fall within the maximisers and managers risk attitudes. In architectural and QS firms, the proportion of firms within the managers' category is 86% and 48% respectively. These firms understand that the business environment is risky, and take necessary steps to mitigate these risks, but that does not stop them from exploring opportunities. There is no consensus in terms of risk attitude across all professions, with the main similarity between the professions being the previous relationship between ARCH-QS professions. Both firms are similar in the highest ranked (managers) and least ranked (pragmatists) risk attitude. Since the data was gathered from top managers of these QS firms, the risk attitude is reflective of the risk profile of the individual, which in turn affects the behaviour of the firm.

Harland et al. (2003) outline that risk attitude changes with experience i.e. an individual or firm used to taking risks may change their attitude after experiencing shocks or heavy losses. For example, the construction industry in Ireland experienced a deep, lengthy recession between 2008-2012, and Murphy (2011) study reported that most of the QS firms investigated were predominantly risk-averse. However, the data from Table 36 points to the fact that most of the QS firms studied fall within the risk-seeking category, which highlights the change in risk attitude of firms in the industry over time. Adams (1995) outlined that individual and firm-level attitude is also affected by outlook; therefore, the return of the sector to growth may be a strong determinant in the changed risk attitude.

A notable finding in the study is the fact that two-thirds of all firms across each profession lie within the risk-seeking spectrum. The Farmer report (2016) had earlier addressed the risk-averse nature of the construction industry, and the current findings suggests that the risk attitude has changed post-recession, with fewer firms exhibiting caution via the

adoption of a risk-averse approach. The consistent growth recorded in the Irish construction sector over the last five years cannot be ruled out as being a possible explanation for the change in risk attitude. Within this timeline, the risk attitude of firms has shifted towards a more risk-seeking one, suggesting that time and boom-bust cycles plays a role in the overall strategic decision-making process in construction PSFs. In the next section, the timeframe for strategic decision-making is considered, as decisions are made and renewed on an ongoing basis within changing business environments.

7.3.4 Time Horizon

Planning horizon highlights the time interval between the making of a strategic decision and/or its revision, and will also vary from one organisation to the next. Bartol & Martin (1991) outline that strategy processes may adopt a short-, medium- or long-term time horizon, with short-term being annually or less, medium-term (intermediate) from 1 to 5 years, and long term as 5 years or more. Construction PSFs tend to adopt a short-term horizon for planning, mostly on an annual basis (see Table 37). Given the cyclicity of the construction sector in Ireland, it is logical to expect this to be the case.

Table 37 Planning horizon across AES firms

Time Horizon	ARCH	ENG	QS
Annual	40%	40%	47%
Biennial	12%	10%	6%
Triennial	5%	10%	3%
5 years or more	4%	9%	2%
Ad-hoc/As often as required	39%	31%	42%

The next highest-ranked time horizon in CPSFs is the ad-hoc/on-demand approach. This result is not surprising given that majority of the firms in the study select the emergent approach to strategic decision-making. This is the first linking of all professions in the

study. The medium-term and long-term horizons (2 years and above) have minimal use within these firms, partly due to the fact that most of the firms surveyed are SMEs who do not have the requirement for long-term strategic plans as opposed to large firms who have this requirement. Firms in construction usually do not plan beyond five (5) years, as it is unrealistic to do so because many changes could have occurred within that timeframe.

There are several additional dimensions/factors that influence the strategic decision-making process, which may be internal or external to the firm, which are addressed in the following section.

7.3.5 Strategic Decision Making Dimensions

The analysis of process characteristics is very important, but so is the examination of the dimensions and influencing factors shaping the characteristics. The drivers may be internal to the firm (e.g. quality assurance systems), external (e.g. competitor) or relate to evaluation determined (e.g. numerical targets). Table 38 outlines the comparative analysis between all three professions, ranked by the highest mean.

Table 38 Descriptive statistics of dimensions of the decision-making process

Coding	Variables for decision making characteristics	ARCH		ENG		QS	
		Mean	Rank	Mean	Rank	Mean	Rank
A. Internal dimension							
INTERNAL1	Internal quality assurance mechanisms are reviewed on an ongoing basis	3.72	3	4.07	4	3.63	4
INTERNAL2	The decision making process is "top down" (i.e. senior management only)	3.57	6	3.33	6	3.81	3
INTERNAL3	We regularly review our internal business processes (e.g. staff, marketing, IT)	3.63	5	3.73	5	3.55	5
INTERNAL4	Repeat business is critical to our success	4.22	1	4.76	1	4.63	1
INTERNAL5	We actively seek repeat business from existing clients	4.05	2	4.48	2	4.52	2
INTERNAL6	We engage external consultants to facilitate our strategic decision making process	2.78	8	2.69	8	2.24	7
INTERNAL7	Investment in research and development is important to our organisation	3.48	7	3.02	7	3.08	6
INTERNAL8	Investment in staff training and development is prioritised	3.65	4	4.12	3	3.55	5
B. Evaluation dimension							
MEASURE1	We use performance measures in tracking the realisation of strategic objectives (e.g. Balanced scorecard)	2.66	3	3	4	2.78	4
MEASURE2	Clear numerical targets are set and monitored	3.27	1	3.43	1	3.27	2
MEASURE3	Strategy is communicated via informal communication channels within our organisation	3.05	2	3.19	2	3.40	1
MEASURE4	Formal strategy meetings are planned on regular basis	2.64	4	3.1	3	3.00	3
MEASURE5	Strategy tools are used in our decision-making process (e.g. SWOT analysis; scenario planning etc.)	2.97	2	3.07	2	2.71	5
C. External dimension							
EXTERNAL1	Competitor analysis is undertaken	3.3	1	3.45	1	2.97	3
EXTERNAL2	Analysis of the construction industry is undertaken on an ongoing basis (e.g. industry reports; Tender Price Indices)	2.58	3	2.9	3	4.00	1
EXTERNAL3	The macroeconomic environment is systematically reviewed (e.g. GDP; Interest Rates; Employment trends)	3.72	3	4.07	4	3.34	2

Across all three professions, INTERNAL 4 (repeat business) is the highest-ranked internal element when making strategic decisions across all three PSFs. There is now substantial evidence to conclude that the decision to seek repeat business among clients is the most sought after within construction PSFs, particularly when considering internal decision making components. Repeat business and reputation are fundamental to PSF's, particularly in Irish Architectural practices (Rooney, 2009) and their QS counterparts (Murphy, 2013), but now we can see it is equally important for consulting engineering firms too.

On the external factors that contribute to the strategic decision-making process, EXTERNAL 1 (competitor analysis) is the most highly ranked strategic decision making characteristics across the first two professions, i.e. architectural and engineering practices. This implies that these firms rank competitor analysis as the most critical external factor, while QS firms rank industry analysis highest. This concurs with the assertion of Murphy (2013) that QS firms do not undertake competitor analysis, at least not in a structured manner. The same pattern is observed in the evaluation criteria for decision making where architectural and engineering practices again rank clear numerical targets as the key decision making criteria. QS Firms again select a different option as the preferred evaluation criteria (i.e. informal strategy communications), highlighting a distinction in both external and evaluation criteria for QS firms only. A detailed analysis of the strategic decision making characteristics is presented in Table 38.

A crucial finding in the study is that all AES professions consider repeat business as the most critical criteria for internal strategic decision making as shown in the table. Repeat business as the preferred internal dimension of strategic decision-making is linked to the

reputational focus of these firms (Hillebrandt, Cannon and Lansley, 1995). Boothman and Craig (2016) also outlined that repeat business is an accurate measure of the level of a customer's satisfaction or signs of a good working relationship between the firm and the client. They also emphasised that firms sought repeat business as a way of building a good reputation with the client and in the industry. AES firms differ in terms of external and evaluation dimensions; however, they are similar in terms of internal dimensions.

The firms also primarily select setting clear numerical targets as their primary focus when evaluating the decision-making process. This measure was introduced as an alternative to profitability or performance metrics, as firms in the Irish construction industry are averse to discussing profitability or financial issues. Research evidence from key strategy authors within Irish construction (i.e. Rooney, 2009; Flemming, 2011; Murphy, 2011) show the aversion for finance related metrics, and since financial performance did not fall under the objectives of the study, it was not investigated further.

As is evident from Table 38, the primary external dimension selected by firms within the study is competitor analysis. Sherman, Rowley and Armandi (2007) outline that during the strategy formulation process, understanding the competition is critical as it enables the firm to understand its fundamental traits and strategic personality, while making appropriate adjustments to the firm and/or its competitive personality. Competitor analysis can be carried out either actively or passively, and the nature of this within construction PSFs is further explored in stage II of the research. Understanding the competition is one of the critical steps in building and sustaining competitive advantage.

The internal dimensions, evaluation, and external dimensions as well as other characteristics of the decision-making process will consequently affect the choices

available to the strategist within a firm. Therefore, it is critical to examine the eventual choices selected by managers within each profession in a bid to further understand the strategic decision-making process.

7.4 Strategic Choice

In the strategic decision-making process, firms are required to make choices between alternative strategic options, and this choice entails selecting a domain where the organisation will operate (Kald, Nilsson & Rapp, 2000). There are different choices available to firms, namely corporate and business level strategies, and these are now considered in the following analysis.

7.4.1 Corporate-Level Strategy

The corporate strategy of a firm relates to the method(s) through which it manages its overall business together (Grant, 1996). These high-level corporate objectives are concerned with what choices managers must make, particularly concerning competition, selecting value creation activities, and whether to enter, consolidate, or exit businesses for the maximisation of long-term gain. In Table 39, the corporate strategy across all three professions is provided.

Table 39 Corporate Strategy in AES firms

Corporate strategy	ARCH	ENG	QS
Maintain/Stabilisation	27%	28%	40%
Expansion	55%	67%	37%
Rationalising/Downsizing	7%	0%	9%
Combination	11%	5%	14%

From Table 39, architectural and consulting engineering firms are predominantly undergoing expansion, while QS firms are primarily maintaining their market share.

Razmdoost & Mills (2016) asserts that expansion of services could lead to whole-life project success in some cases, resulting in increased competitiveness and organisational success over the long term. Murphy (2011) in an earlier study found that 50% of the QS firms were undergoing stabilisation, and the data in this study is similar with 40% of QS firms undergoing stabilisation. This further reinforces the earlier findings that QS firms have not undergone significant changes since the return to growth. While the proportion of firms undergoing stabilisation study has reduced to 40%, QS firms are still predominantly maintaining market share.

In architectural and consulting engineering firms, the second-highest ranked corporate strategic choice is stabilisation, while expansion is the preferred option in QS firms in this case. For QS firms, more than a third of the respondents are undergoing expansion showing that the economy has significantly changed and market conditions more favourable for them. Stabilisation occurs when firms seek to protect and strengthen their position in their current markets with current services/products. This does not mean standing still (Johnson & Scholes, 2008), but since the market situation is constantly changing, stabilisation suggests the firm is seeking ways to retain their market share.

Less than 10% of the firms are rationalising/downsizing across all professions, demonstrating that the business environment has indeed become more conducive for doing business, prompting firms to concentrate on expansion rather than downsize. Although Murphy (2011) found that more than a fourth of the firms investigated in her study were downsizing, the situation has changed significantly now with more of the firms seeking to expand rather than downsize, further showing evidence of the effect of boom-bust cycles within the Irish construction sector. Architectural and QS firms are the

only professions with a proportion of firms downsizing, and they constitute a minute portion of the respondent population, implying that only a few firms are reducing in terms of organisational size or business areas.

A number of the firms studied also assert that they employ a combination strategy, i.e. they combine two or more corporate strategy choices. These firms form 11%, 5% and 14% of the respondent population across architectural, consulting engineering and QS firms respectively. Some studies have highlighted that businesses adopting combination approaches – particularly who align the combination with supporting capabilities – might outperform their single strategy counterparts (Parnell, 2013), however this study is mainly exploratory and does not explore causation or performance, hence the effect of adopting combination strategies cannot be sufficiently determined.

Strategic choices are dynamic in nature, and in order to highlight possible changes in the corporate strategy of the firms investigated, particularly within the period 2013 (first year of non-negative growth post-recession) to 2018 (sustained growth period), a further level of analysis was conducted and presented in Figure 19.

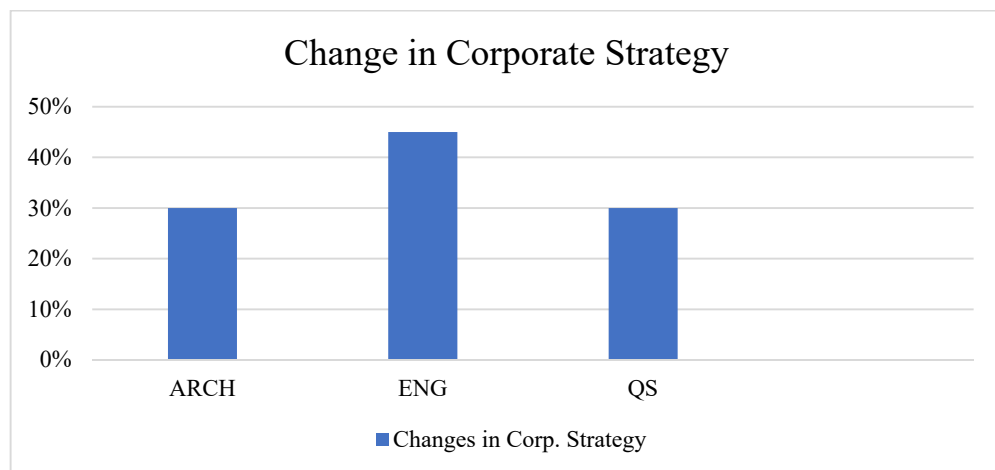


Figure 19 Changes in Corporate Strategy (Quantitative)

From Figure 19, we see again that ARCH and QS firms maintain similarity in line with earlier findings. Consulting engineering firms are the one with the most significantly changed corporate level strategic choice over the last 5 years, forming a novel contribution to knowledge, as this is the first study to undertake an analysis of the change in corporate strategy within the context of Irish CPSFs.

Table 40 Changes in the corporate strategy of QS Firms

Comments	EXP	MAINT	DOWN	COMB
With the emergence of multi-disciplinary firms, we are trying to partner with other design team members in order to compete.	X			
More focused on growth	X			
Over the last 8 years the practice has dramatically downsized and I have tried to upskill and offer new services			X	
Market conditions have changed - outlook is positive	X			
We look to maintain current market position as a minimum but always looking to expand if right long term opportunity arises.		X		
Changed from recovery mode and expanding revenues towards consolidation of current position.	X			
We have sought to focus on winning further work with a focus on key regional clients thereby reducing the amount of work we tender for and increasing our win ratio		X		
Declining to tender for public sector work		X		
Our strategy is maintain our position within the market while at all times seeking out opportunities in all sectors		X		
We are currently directly appointed by Clients. We seek to be the primary and first consultant appointed of any design team.	X			

In Table 40, the changes in corporate strategy within QS firms is outlined, showing a split between expansion and stabilisation between the period 2013 and 2018 (i.e. end of negative growth to period of sustained growth). Only one firm out of the sample selected that they have been forced to downsize. A similar analysis of the changes in corporate strategy in engineering and architectural firms is contained in Tables 40 and 41.

Table 41 Changes in the corporate strategy of Consulting Engineering firms

Comments	EXP	CONS	DOWN	COMB
Focusing on speciality instead of scale		X		
Over the past five years, I was keen to expand the practice, but I am now concerned to maintain it		X		
Expansion wasn't on the cards 5 yrs. ago	X			
Now we are targeting new sectors and also organic growth in terms of headcount	X			
Changed from securing market position to increasing profits	X			
Offering more services to the market	X			
We have focused on new services and new markets	X			
Re grown capacity and turnover	X			
Had been seeking to maintain position		X		
Strategy shift to have a base in the Eastern Region, our HQ being in the North West	X			
We are looking to add additional services to address our Clients' needs, e.g. Process Engineering	X			
Shift to expand in UK and focus on growth in international market with Irish market maintained	X			
Our strategy has been moulded to suit our model and we have refused many projects because they don't fit our model.		X		
We seek new areas of projects and we are expanding our marketing technique	X			
Export of professional services	X			
We started in the recession and so did a lot of work in the UK but would like to maintain this and expand the Irish business				X

The changes reported documented in Table 41 shows that consulting engineering firms

have changed to become more focused on expansion, supporting earlier findings in Table 39. Most of the changes recorded are related to expansion/increase in service offerings. One thing that continually stands out is that no firm claims to have downsized over the last five years, corroborating findings from the literature review about the return to growth in the construction sector. In architectural practices, the changes to corporate strategy are also mainly a shift from maintaining, to expansion of services between the period 2013 and 2018 (i.e. end of recession to period of return to growth). The changes reported are recorded in Table 42, outlining the focus of the firms on expansion and with few respondents consolidating or downsizing over the last five years.

Table 42 Changes in the corporate strategy of Architectural practices

Comments	EXP	CONS	DOWN	COMB
Reduced in size			X	
We are going into association with another architect to deal with residential work to concentrate more on conservation.	X			
We have partnered with another office to carry out and tender for larger-scale projects	X			
We have gone from survival to modest growth	X			
Market-related growth	X			
Downsized practice to suit lifestyle and specialise/provide more consultancy based practice			X	
We were down to one person, now back up to two full time and a partnership	X			
Looking for opportunities outside Ireland	X			
The scale of work has increased. The range of services has been reduced and we are collaborating with 3rd parties to provide an expanded service.	X		X	
We are now working on maintaining sales figures and making work practices more economic		X		
We have widened the scope of our work to include more tourism projects, interpretative design and strategic reviews	X			
Moving from survival to expansion though access to contracts is limited	X			
Reduced scope of service to concentrate on consultancy and reduce involvement with construction contracts.			X	
Seeking more commercial work	X			
We have grown in size and expanded into providing DC/AC services and interior design.	X			

The data in Tables 40-42 shows a significant proportion of the changes in the corporate strategy are expansion-related. Warszawski (1996) outlined that expansion could involve increasing the number of current service offerings or specialisation in a particular area of service, thus helping the researcher allocate the comments into appropriate themes. This expansion is often referred to as “growth strategies”.

Growth strategies are employed by firms in order to increase the sales and profit of the firm, and firms need to adopt the right growth strategies in order to align their internal functions with the external environment (Cheah & Chew, 2005). Since the majority of PSFs in the Irish construction sector are expanding, their corresponding growth strategies are investigated to see how they are achieving their corporate objective of expansion.

Table 43 outlines the growth strategies employed by AES firms studied, with the primary growth strategy employed being strategic partnerships across architectural and consulting engineering firms. In QS firms, a different primary approach is taken towards growth, namely international expansion. The data also points to the fact that several firms do not employ any of the listed growth strategies, with mergers and acquisitions (M & A) being the least path taken. The reason for the low amount of M & A deals in the respondent population cannot be determined from the data, and more insights are sought during the qualitative stage of the study.

Table 43 Growth strategies in QS firms

Growth strategy	ARCH	ENG	QS
Partnerships	44%	43%	9%
Acquisition of a practice	2%	2%	1%
Merger with another practice	11%	10%	7%
International expansion	8%	31%	17%
None of the above	51%	41%	71%

Having now understood the overarching strategic choices available to firms and the accompanying growth strategies, the other level of choice in operationalising the corporate strategy must be examined.

The unit of measuring business level strategy uses those put forward by Porter (1980), who distinguishes three main groups, namely: (1) *Cost leadership: emphasising cost reduction of its products and services*; (2) *differentiation: offering the customer a unique value by stressing quality, performance, or service*; and (3) *focus: targeting on a selected segment of the market in terms of location, product, or group of customers*. Additional categories distinguishes the focus strategy towards cost or differentiation, is also explored in the study, including the *stuck-in-the-middle* option, which has been explained in 3.6.2.

7.4.2 Business Level Strategy

There is considerable evidence confirming professional service firms prefer to pursue differentiation strategies ahead of other business strategies (Cavusgil & Knight, 2009; Amonini et al., 2010), however seldom is this compared across professions. Table 44 explores the business strategic choices adopted within Irish CPSFs.

Table 44 Business strategic choices in AES

Bus. strategic choice	ARCH	ENG	QS
Low-cost	4%	0%	14%
Differentiation	54%	19%	55%
Focus	15%	7%	12%
Diff-focus	24%	71%	6%
Cost-Focus	1%	0%	8%
Diff-Cost	2%	0%	5%
Stuck in the middle	0%	3%	0%

The most frequent business strategy pursued by both architectural and QS firms in Ireland is differentiation (see Table 44). Differentiation strategy ranks highest within the two professions and is pursued by 54% and 55% of respondents across architectural and QS firms, respectively. Only consulting engineering firms select a different business strategic choice, as they primarily select the differentiation-focus option instead of pure differentiation. The data for consulting engineering firms suggests that these firms do not usually compete on a low-cost basis, thus distinguishing them again from ARCH and QS firms. A large proportion of consulting engineering firms pursue combination strategies, and only 26% of them follow pure strategies (19% pursuing differentiation strategies and 7% aligning with the focus strategy).

One unanticipated finding was that 3% of consulting engineering respondents select that they pursue a combination of all three strategies presented, which may be interpreted as being “stuck-in-the-middle” as espoused by Porter (1980). A possible reason why engineering firms are averse to the low-cost strategic choice is difficult to determine, but one explanation for this is provided in the additional comments section, where respondents appear more agreeable with offering superior differentiating services, while focusing on a niche area of service offering. One explanation may be, however, that since the firms surveyed are consulting firms and not ordinary engineering firms, the low-cost business strategy may be undesirable due to the high level of expertise held by these firms.

Architectural firms, on the other hand, are also clearly not in favour of operating on a low-cost basis, as less than 5% of the sample population select the low-cost option as their business strategy. Also worthy of note is the small number of firms who compete with the mixed low-cost strategic options (i.e. cost-focus and differentiation cost). This

suggests that the level of price wars is not intense, and the firms prefer to differentiate their business offerings from others via value creation, rather than on the basis of price.

QS firms have the highest proportion of firms who are operating on a low-cost basis (14%), with another 13% employing a combination of low-cost with other business strategic choices. It is reasonable to conclude, therefore, that the primary business strategy employed across all three professions is differentiation strategy. Oyewobi et al. (2014) outline that construction organisations adopt differentiation strategies in a bid to ensure survival in complex business environments; thus, the data supports the complex nature of the Irish business environment and firms selecting the differentiation strategy primarily are seeking to survive in the market.

Similar to the process employed in the analysis of corporate level strategic choice, the changes in business strategic choices over the last five years was taken into consideration in the study. Table 45 outlines the changes that have taken place in these firms across all three professions.

Table 45 Changes on Business strategic choices of AES firms

Bus. choice	Strat.	ARCH	ENG	QS
Low cost		-	-	Business process re-engineering to cut costs.
Differentiation		Providing full service to residential clients.	Specialisation/new business sectors/clients.	Reduced service offerings.
		Upskilling in BIM and conservation projects.	Development of in-house sustainability and BIM services.	Developing additional services to service new business segment.
		Combining architecture and other business service offerings.	Moved away from bidding for infrastructure projects.	Acquired a practice for growth/expansion.
Focus		Focusing more on the quality of work.	ISO certification and gaining "Great places to work recognition".	Invested in technology to cut costs to clients.
		Focus on segmentation of services/core service offerings.	Focus on industrial/pharma clients/ Evolved business to focus on model development and client	Introduced new technology for enhanced service delivery.

		work flows.	
	Greater focus on sectoral growth in Ireland and Europe.	Introduced quality and risk management techniques into business.	Leveraging competencies for new client acquisition.

The data presented in Table 45 outlines the themes outlined by PSFs regarding the changes recorded in their business strategic choices. It is worthy of note to see that only QS firms have implemented changes aligned with low-cost strategies. A possible explanation for this might be that they have the proportion of firms downsizing, hence they have to compete on a low-cost basis to stay afloat. Another possible explanation for this is that QS firms have a high proportion of firms who are maximisers (highly risk savvy), with the possible implication that they may take on high risk projects even if it is at lower cost. Architectural and consulting engineering firms, on the other hand, appear not to have changed in adopting any cost-leadership related strategies in the last five years, as majority of the changes adopted were related to differentiation and focus strategies.

Knowledge acquisition is critical to the strategic decision making process in construction PSFs, as Bagnoli & Vedovato (2014) argued effective knowledge acquisition (and indeed over KM process) should be considered in line with the firm's business strategy. Therefore, the KA aspect of strategic decision-making process is investigated.

7.5 Knowledge Acquisition in AES Firms

Having previously postulated that PSF knowledge acquisition process is largely contagion-driven, the SC theory put forward was put to test. Table 46 shows that the knowledge acquisition process within construction PSFs falls under the social contagion region, i.e. firms who respond that they give no thought as to how knowledge is acquired

or leave the process to emerge by itself.

The possibility of the knowledge acquisition process to be driven via social contagion warrants consideration, as CPSFs tend to ignore the processes involved in knowledge acquisition and focus instead on other aspects of their business. As part of the research, data was collected to ascertain the extent of social contagion in knowledge acquisition, which is detailed in Table 46.

Table 46 Process-related metrics for knowledge acquisition

Process-related metrics		ARCH	ENG	QS
Formal	<i>Deliberate</i>	35%	45%	42%
Emergent	<i>Contagion-Driven</i>	39%	55%	28%
No consideration given/Industry-driven		26%	-	30%

The data presented in Table 46 shows the largely non-deliberate nature of knowledge acquisition in construction PSFs. With the knowledge acquisition process in these firms being largely contagion-driven (i.e. driven by either industry or autonomous), their exposure to the influence of professional bodies and knowledge communities is more pronounced. The role that people and technology related measures play in the knowledge acquisition process is also investigated in this study and the data is presented in Table 47. Different people and technology related variables are measured across all three practices. The findings presented in Tables 46 and 47 were used for the development of a model of social contagion, contained in Appendix L.

Data from Table 47 shows that staff training and development is the priority for architectural and engineering practices, while client feedback ranks first in QS firms in terms of people-related metrics.

Table 47 Variables for knowledge acquisition for strategic decision-making

Coding	Variables for knowledge acquisition for strategic decision making	Mean response (1-5 Likert scale)					
		ARCH	Rank	ENG	Rank	QS	Rank
People-related factors							
PEOPLE1	We rely on professional networks to acquire industry insight/knowledge e.g. SCSJ/RICS	3.89	2	3.81	3	3.84	2
PEOPLE2	Regularly engage in training and development of staff	4.07	1	4.31	1	3.77	4
PEOPLE3	Our organisation utilises client feedback	3.66	4	3.67	4	3.88	1
PEOPLE4	New knowledge gained by employees form part of staff annual/performance review	3.49	5	3.55	5	3.50	5
PEOPLE5	Sharing internal knowledge is incorporated into our company structure	3.88	3	4.14	2	3.78	3
Technology-related Factors							
TECH1	We are investing in the acquisition of new technologies and know-how.	3.59	3	4.02	3	3.88	3
TECH2	We invest in technology to maintain our competitive position within the construction market.	3.80	1	4.07	1	3.92	2
TECH3	Technology is critical to the improvement of our internal business process.	3.65	2	4.05	2	3.98	1
TECH4	There is a culture of technological innovation, driven by top management.	3.36	4	3.86	4	3.83	4

The data in Table 47 suggests that architectural practices and consulting engineering prioritise the development of their staff as a means of knowledge acquisition over other metrics. QS firms, on the other hand, prioritise client feedback as a means of acquiring knowledge, and this is linked to their ranking repeat business as their priority in strategic decision-making characteristics (see section 7.3.5). Since QS firms are heavily focused on repeat business (see Table 47), the feedback from current clients is a key learning point for them to acquire knowledge on how to serve the client better and to improve client retention rates.

Seriki & Murphy (2018) in their social contagion model (contained in Appendix L), stressed about the increasing influence of professional networks on knowledge acquisition, and the “herding” problem. They outlined that communities of practice and professional networks lead to firms behaving like ‘herds’ in terms of knowledge acquisition, eroding differentiation and creating strategically homogenous firms.

The least ranked people-related metric is the use of knowledge acquisition as a measure in yearly performance reviews (PEOPLE4). The consequence is that knowledge acquisition is seldom used as part of staff annual appraisal or performance measurement. In PSFs, that is a surprising finding as the main competitive edge of these companies is knowledge.

In relation to technology, the data from Table 47 further suggests that most construction PSFs invest in technology as a means of maintaining competitive advantage in the market. Again, QS firms are the only different profession, ranking technology to be primarily for improving their internal business process. A surprising ranking is that of technology as a tool for innovation, which ranks fourth on the metrics studied. This diverges from what

we know about construction in terms of its lack of innovation due to its fragmented and adversarial nature (Latham, 1994; Farmer, 2016). However, it still suggests a dearth of technological innovation-driven by top management within the culture in Irish AES firms, and may be due to the fact that most of the innovative elements in construction are not produced by created by construction experts themselves, but by others from industries such as IT and manufacturing (e.g. 3D printing).

7.6 Multi-Level Analysis

A three-step iterative process of multi-level analysis is conducted to gain further insight and determine relationships between variables.

First, the data was filtered based on size. Secondly, the data was compared based on ownership structure to explore how ownership structure affects the decision-making process in these firms. Thirdly, deeper insights into how the age of a firm affects the strategic decision-making process were explored.

This three-tier analysis ensured that all demographic variables were analysed beyond primary descriptive statistics, using selected macro-context characteristics such as company size, ownership structure and firm age to gain deeper insights into the strategy process. Concurrently, a comparative analysis within each selected context is presented to further identify similarities and differences within contextual parameters, e.g. is the strategy process in small firms similar to same obtainable in large enterprises?

The questions under the multilevel analysis are explored to see how these variables (*i.e. size, ownership structure and firm age*) affect the strategic decision-making process in CPSFs. The reason for selecting these three metrics is tripartite. First, the majority of existing knowledge focuses on large firms; however, the majority of CPSF's are SME's.

Hence, in analysing based on size, a fuller picture of strategic decision-making across all firm sizes can be provided. Secondly, the subject of ownership structure has been explored within strategy contexts in countries such as Singapore (Cuervo & Low, 2003) and Indonesia (Pamulu, 2010), but there is a lack of research investigating this in the Irish context. Thirdly, researchers such as Oyewobi, Windapo & Cattell (2013) had previously found that firm age was a moderating factor in the strategic management of construction firms, thus this position is tested in the Irish context.

7.6.1 Size

7.6.1.1 Small Firms

Small firms in this study refer to firms with less than 10 persons employed. Table 48 shows that most of the small-sized firms in the study are more than 20 years old (i.e. witnessed the Celtic tiger years and survived).

Table 48 Overview of the strategy process in small firms

Measures	ARCH	ENG	QS
Years in operation	Mostly >20 yrs	Mostly >20 yrs	Mostly >20 yrs
Ownership structure	Private limited company	Public/Private limited company	Sole practitioner
Approach to strategy	Emergent	Emergent	Emergent
Strategic types	Reactors	Reactors	Reactors
Risk attitude	Managers	Conservators	Managers
Corporate strategy	Expansion	Expansion	Consolidation
Business strategy	Differentiation	Differentiation-Focus	Differentiation
Growth strategy	Partnerships	Partnerships	Partnerships
KA Process	Emergent	Emergent	Planned
Planning horizon	Ad-hoc	Ad-hoc	Annual
Written strategic plan	25%	25%	<10%

Table 48 also outlines that small firms employ an emergent approach to strategy and are primarily reactors. In addition, most of the firms adopt a differentiation approach to their business and the majority are looking to expand their businesses. Small sized architectural and engineering firms recorded marked similarity in the decision-making process across several areas. Surprisingly, QS firms were found to be slightly different from the other two in terms of corporate strategy, KA process and planning horizon. Most notably, less than 10% of small sized QS firms have a formal, written strategy. Lyles et al. (1993) found in a major study of small firms in the USA that a formalised strategic planning process has numerous benefits, however the planning process in small firms is primarily emergent (i.e. ARCH & ENG). O'Regan & Ghobadian (2002) also espoused that having a formal strategy process improves strategy formulation, developing distinctive competencies, determining authority relationships, deploying resources, and monitoring strategy implementation. Lester et al. (2008) also posits that small organisations are often leaner, and pursue differentiation strategies over those emphasising low costs and efficiency, validating the findings from the study and justifying their preference for emergent form of strategy.

Parnell, Long & Lester (2015) also put forward that small firms are faced with lots of uncertainty and many small businesses have to learn to adjust to this uncertainty by growing (-or shrinking) their operations to fit the circumstances on demand. This process will require a flexible approach, therefore embracing a formal approach to the strategy may not be feasible. The findings observed in this study mirror those of Raju et al. (2011), who claim that small-sized businesses may have fewer resources to commit to a formal strategy process.

This study produced results, which corroborate the findings of Ates and Bititci (2011), who demonstrated that growth, market share, and financial success are not necessarily the goals of small firms, and it is no surprise that rather than internationalisation, small businesses seek to enter into partnerships instead.

In conclusion, only marginal differences exist between small firms across professional lines, with an extended analysis of all small firms contained in Appendix M.

7.6.1.2 Medium Firms

Medium enterprises are firms with 10-49 persons employed based on the reclassification. Table 49 outlines that most of the medium-sized firms in the study are more than 20 years old (i.e. witnessed the Celtic tiger years and survived), and predominantly owned by partners.

Table 49 Overview of the strategy process in Medium firms

Measures	ARCH	ENG	QS
Years in operation	Mostly >20 yrs	Mostly >20 yrs	Mostly >20 yrs
Ownership structure	Private limited company	Partnership	Partnership
Approach to strategy	Emergent	Emergent	Planned
Strategic types	Defenders	Reactors	Reactors
Risk attitude	Managers	Managers	Maximisers/Managers
Corporate strategy	Expansion	Expansion	Expansion
Business strategy	Differentiation	Differentiation-Focus	Differentiation
Growth strategy	Partnerships	Partnerships	International expansion
KA Process	Planned	Emergent	Emergent
Planning horizon	Annual	Annual	Annual
% of firms with written strategic plan	31.25%	38.46%	40.00%

The data in Table 49 reinforces the position of O'Regan and Ghobadian (2002), who argued that ownership structure is a critical factor in the strategic direction of small and medium-sized enterprises. As a result, having a large proportion of firms owned by partners gives considerable autonomy to the owners of firms involved in this study. The firms are also primarily reactors except architectural firms who are defenders, and all three professions are predominantly expanding.

Research on the strategic decision-making process in medium-sized firms is in relatively short supply, despite Peel and Bridge (1998) reporting a robust positive relationship between strategic management and business success. The data presented in Table 46 shows that the primary time horizon for reviewing strategic decision making in medium-sized firms is on an annual basis. This timely review is crucial as earlier research by Florea & Florea (2014) decried that managers within SMEs within the EU were unable to identify changes in the business environment in due time in order to find take effective decisions.

There are similarities between the risk attitudes expressed by small and medium firms, as medium firms are primarily managers in terms of their risk attitude. This suggests that medium-sized firms are conscious of the inherent risk in their current business environment, but it does not deter them from taking calculated risks. A more detailed analysis of medium-sized firms is contained in Appendix N.

7.6.1.3 Large Firms

Large firms in this study are enterprises with more than 50 persons employed. There is no shortage of research focused on large firms within construction studies (e.g. Lowstedt, 2015; Tansey, 2018); however, the data on large construction PSFs is much less available,

hence making this contribution crucial. A key finding from this study is that majority of the large firms are privately owned, and Elbanna (2010) suggested that there were no significant strategic differences between public and private organisations. Table 50 provides more data about large firms and their decision-making characteristics.

The data in Table 50 shows that most of the large-sized firms in the study are more than 20 years old (i.e. witnessed the Celtic tiger years and survived) and employ a planned approach to strategy. A key finding within large firms is that they are mostly defender firms, and a key characteristic is that they will operate in a relatively stable environment and offer a narrow range of services (Cinquini & Tennuci, 2010).

Table 50 Overview of the strategy process in large-sized firms

Measures	ARCH	ENG	QS
Years in operation	Mostly >20 yrs.	Mostly >20 yrs.	Mostly >20 yrs.
Ownership structure	Private limited company	Private limited company	Private limited company
Approach to strategy	Planned	Planned	Planned
Strategic types	Defenders	Defenders	Defenders
Risk attitude	Managers	Maximisers	Maximisers
Corporate strategy	Expansion	Expansion	Combination
Business strategy	Differentiation	Differentiation-Focus	Differentiation
Growth strategy	Partnerships/ International expansion	Partnerships/ International expansion	International expansion
KA Process	Emergent	Planned	Emergent
Planning horizon	Ad-hoc/As often as required	Annual	Quinquennial
% of firms having a written strategic plan	100%	72.73%	100%

Defenders also work hard at sealing off a portion of the total market, to create a stable set of services and niche for their clients (Slater & Olson, 2001). This may be the reason why large firms also seek to grow primarily via international expansion and partnerships since they have more resources and competencies. With these resources at their disposal, they are able to select the differentiation business strategic choice to compete in the market (Cheah et al. 2007).

Another crucial finding in large firms is the diverse nature of their planning horizon. ARCH, ENG and QS practices select different primary options in terms of their time horizons, and this may be due to the difference in types of services offered among other factors. Lastly, a number of large firms in the study have a formal written plan (100% in architectural and QS practices), meaning that they have very formalised structure for strategic management. In addition, in large firms, there are usually several shareholders, and having a written, formal strategy would be critical for communication of the firm's strategic goals to shareholders. A full detailed outline of the quantitative analysis of large-sized firms is provided in Appendix O.

A summary of all the findings from SME and large firms is also provided in Table 51.

7.6.1.4 Comparative Analysis

Table 51 Summary table for strategy parameters for CPSFS based on company size (Predominant measures used for generalisation)

S/N	Variables	Small firms	Medium sized firms	Large firms
1.	Number of years in operation	> 20 years old	> 20 years old	> 20 years old
2.	Ownership structure	Predominantly private limited companies	Predominantly partnerships and private limited companies	Predominantly private limited companies
3.	Approach to strategy	Emergent	Emergent	Planned
4.	Strategic type	Reactors	Reactors	Defenders
5.	Risk Attitude	Managers	Managers	Maximisers
6.	Corporate strategy	Expansion	Expansion	Expansion
7.	Business strategy	Differentiation	Differentiation/Differentiation-Focus	Differentiation
8.	Growth strategy	Strategic partnerships	Strategic partnerships	International expansion/strategic partnership
9.	Knowledge acquisition process	Emergent	Emergent	Emergent
10.	Planning horizon	Ad-hoc/Annual	Annual	Annual, Triennial & Quinquennial

7.6.2 Ownership Structure

In the analysis of data within this study, another critical factor considered was the ownership structure. First, only five types of firms were considered in the study and the ownership structure was benchmarked against the Irish system i.e. Sole Practitioners, Partnerships, Public Limited Company, Part of Global Consultancy, and Private Limited Company. This ensured that all five cases share a set of similar macro-context characteristics and face the same executive succession issues (Stiles, 2001).

7.6.2.1 Sole Proprietorship

Sole proprietorship are firms where the firm has mainly only one employee, and does not have any partners in the business (Revenue.ie, 2019). Table 52 shows that most of the sole proprietor owned firms in the study are more than 20 years old, primarily small firms and employ a predominantly emergent approach to strategy.

Table 52 Overview of the strategy process in sole proprietorship firms

Measures	ARCH	ENG	QS
Years in operation	Mostly >20 yrs	Mostly >20 yrs	Mostly >20 yrs
Firm size	Small firms	Small firms	Small firms
Approach to strategy	Internal resource-driven	Emergent	Emergent
Strategic types	Reactors	Reactors	Reactors
Risk attitude	Managers	Conservators	Managers
Corporate strategy	Consolidation	Consolidation	Consolidation
Business strategy	Differentiation	Focus/Differentiation- Focus	Differentiation
Growth strategy	Partnership	Partnership/Mergers	Partnership/Mergers
KA Process	Emergent	Planned/Emergent	Planned
Planning horizon	Ad-hoc	Ad-hoc	Annual
% of firms having a written strategic plan	36%	50%	4%

Cooperstein & Barthelemy (2003) did not find any major differences in the strategy processes between firms of different ownership structures, from sole proprietorships to internationally publicly held companies. However in this study, particularly across professions, there appears to be a few differences, especially in architectural practices. The first main difference is that the approach to strategy in sole proprietor owned architectural practices is internal resources driven. This implies that the approach to strategy is dependent on the availability of resources to the practice.

Sole proprietorships are mainly reactors, managers in terms of their risk attitude and consolidating their businesses. That these firms are mainly consolidating their business is not unexpected as they may have limited human and financial resources available to them for expansion, and are also reactive to the market. Being mainly reactor firms also suggests that they do not have any consistent pattern of response behaviour to environmental conditions (Matsuno and Metzger, 2000). They only respond when competitive circumstances forces them to do so, and they usually do so in a characteristically inconsistent and unstable manner.

The data also shows that QS firms owned by sole proprietors are different in a way, particularly in terms of their planning horizon and number of firms with a strategic plan. Although they plan mainly on an annual basis yet they have just 4% of their respondent population with a written plan. A detailed analysis of the quantitative data on sole proprietorship firms is attached in Appendix P.

7.6.2.2 Partnership

The Irish Partnership Act 1890 (Irish Statute Book, 2019) defines a partnership as when 2 or more people carry on business with a common view of profit. A partnership is a

group of two or more individuals or groups working together to achieve a common objective. Table 53 outlines the data from the study on partnership firms, shows that most of the firms owned by partners in the study are more than 20 years old (i.e. witnessed the Celtic tiger years and survived), predominantly small firms, and employ a predominantly emergent approach to strategy. Having an emergent approach to strategy suggests that these firms adopt an approach that which is never entirely certain, but is constantly adaptive, i.e. strategy, which emerges, rather than being decided upfront (McCabe, 2012). This may be due to the multiple levels of decision making present in partnerships. Table 53 outlines more details about the decision making process in partnerships.

Table 53 Overview of the strategy process in partnerships

Measures	ARCH	ENG	QS
Years in operation	11-15 years	Mostly >20 yrs	Mostly >20 yrs
Firm size	Small firms	Small firms	Small firms
Approach to strategy	Emergent	Emergent	Planned/Emergent
Strategic types	Defenders	Reactors	Reactors
Risk attitude	Managers	Maximisers/Managers	Maximisers
Corporate strategy	Expansion	Expansion	Expansion
Business strategy	Differentiation	Differentiation-Focus	Differentiation
Growth strategy	Partnership	Partnership	None
KA Process	Emergent	Emergent	Planned
Planning horizon	Annual	Annual	As often as required
% of firms having a written plan	42.86%	43.75%	25%

The predominant risk attitude displayed in partnership firms differs slightly across

professions, but they remain within the risk-seeking spectrum (i.e. maximisers and managers). This indicates that firms owned by partners are primarily risk seeking in their overall risk attitude. Only architectural firms have a different primary strategic type (defenders), but have similar decision-making characteristics on several other metrics. Similar to the data obtained in sole proprietorships, QS firms have the lowest number of firms who have a written strategic plan, again underlining that strategy processes are more formalised in architectural and engineering practices than QS firms. For detailed analysis of the quantitative data on partnership owned firms, see Appendix Q.

7.6.2.3 Public Limited Companies

A Public Limited Company is one that is listed on the Stock Exchange (Company formations Ireland, 2019). There is no restriction on the number of shareholders that a public company can have, and the firm must have at least two directors. Table 54 provides a brief summary of the data from this category.

Table 54 Overview of the strategy process in public limited companies

Measures	ARCH	ENG	QS
Years in operation	1-5 years	Mostly >20 yrs	Mostly >20 yrs
Firm size	Medium firms	Small firms	Small firms
Approach to strategy	Emergent	Emergent	Emergent
Strategic types	Reactors	Reactors	Reactors
Risk attitude	Managers	Managers	Managers
Corporate strategy	Expansion	Expansion	Expansion
Business strategy	Differentiation	Differentiation-Focus	Differentiation
Growth strategy	Partnerships	Partnerships	Partnership/Intl expansion
KA Process	Industry driven	Emergent	Planned/Emergent
Planning horizon	Ad-hoc	Ad-hoc	Annual/ Ad-hoc
% written plan	0%	28.57%	13.64%

The data in Table 54 shows an unusual similarity across all professions. Public firms are similar in terms of their approach to strategy, strategic type, corporate/business strategic choice, risk attitude, and growth strategy. Architectural firms are quite different only in their knowledge acquisition process (which is industry-driven), with none of the publicly listed architectural firms having a written strategy. Another key finding is that public firms prefer strategic partnerships as the key avenue for growth and they primarily select expansion as their preferred corporate strategic choice (detailed analysis in Appendix R).

7.6.2.4 Private Limited Companies

A Private Company Limited by Shares is the most common form of a Limited Liability Company (LLC) in Ireland. The private company has the liability of its members limited by its Constitution to the amount, if any, unpaid on the shares respectively held by them (Company formations Ireland, 2019). More data on LLCs is presented in Table 55.

Table 55 Overview of the strategy process in private limited companies

Measures	ARCH	ENG	QS
Years in operation	Mostly >20 yrs	Mostly >20 yrs	Mostly >20 yrs
Firm size	Small firms	Small firms	Small firms
Approach to strategy	Emergent	Planned	Emergent
Strategic types	Defenders/Reactors	Defenders	Analysers
Risk attitude	Managers	Maximisers	Managers
Corporate strategy	Expansion	Expansion	Expansion/Combination
Business strategy	Differentiation	Differentiation-Focus Partnership/	Differentiation
Growth strategy	Partnership	International expansion	International expansion
KA Process Planning horizon	Planned Annual/Ad-hoc	Planned/Emergent Annual/Ad-hoc	Emergent Ad-hoc
% written plan	31.75%	41.67%	11.11%

The data from Table 55 shows that private firms employ a mix of both planned and emergent approaches to strategy, and that their strategic type is mainly defenders. Defender firms are internally oriented, place emphasis on efficiency and are tightly focused on maintaining a niche with a limited range of products or services (Miles and Snow, 1978). This characteristic is true of private limited firms as they have limited financial resources and face much more scrutiny in terms of resources. Although predominantly defenders, private firms are primarily undergoing expansion. This implies that while seeking to defend their market share, these firms are still trying to maximise profitability via business expansion. It is therefore of no surprise to find that several of the firms in this category have a formal, written plan, and also engaging in strategic partnerships/international expansion as a growth strategy.

Lastly, the time horizon for reviewing strategic plans is quite short in private firms, forming a critical finding and contribution to knowledge on strategic decision-making process in these firms. This may be because private limited firms have a much hands-on shareholding, requiring more agile decision-making, and requiring shorter timelines for them. In public or firms with much complex ownership, the key decisions have to be run through the entire shareholders, requiring more extended timelines for decision-making. A detailed analysis of the quantitative data on private firms, see Appendix S.

7.6.2.5 Part Of A Global Consortium (GC Firms)

These are firms who are part of a global consortium, with headquarters in either Ireland or abroad. The data in Table 56 points to a mixed approach to strategy and a similar split between defenders and prospectors in terms of strategic type. There is no data available for architectural firms as none of the respondent firms selected this option, meaning that

none of the architectural firms who participated in the study belong to this category. In addition, most of the firms in this category are managers in terms of risk attitude, and are currently expanding in terms of their corporate strategic choice.

Table 56 Overview of the strategy process in GC firms

Measures	ARCH	CE	QS
Years in operation	-	Mostly >20 yrs	Mostly >20 yrs
Firm size	-	Medium sized firms	Large firms
Approach to strategy	-	Emergent	Planned
Strategic types	-	Defenders	Prospectors
Risk attitude	-	Managers	Maximisers/Managers
Corporate strategy	-	Expansion	Expansion
Business strategy	-	Differentiation-Focus	Differentiation
Growth strategy	-	International expansion	International expansion
KA Process	-	Planned/Emergent	Planned
Planning horizon	-	Annual/Biennial/Triennial 1	Annual
% of firms with written strategic plan	-	100%	100%

From Table 56, all of the firms who are part of a global consortium have a formal, written strategy are looking to expand their business. This is yet another significant contribution to knowledge as up until the time of writing, how firms within this ownership structure strategise was not known in detail. It is not surprising to find international expansion as the primary growth strategy of these firms, as they have branches internationally and have access to the needed financial and human resources needed.

For detailed analysis of the quantitative data on GC firms, see Appendix T. A brief synopsis of the data gathered across all ownership structures are presented in Table 57.

7.6.2.6 Comparative Analysis

Table 57 Summary table for strategy parameters for CPSFS based on ownership structure (Predominant measures used for generalisation)

S/N	Variables	Sole proprietorship	Partnerships	Public limited companies	Private ltd companies	Global construction firms
1.	Number of years in operation	Majority are > 20 years old	Mostly >20 yrs	Mostly >20 yrs	Mostly >20 yrs	Majority are > 20 years old
2.	Firm size	Predominantly Small firms	Medium firms	Small firms	Small firms	Large sized
3.	Approach to strategy	Emergent	Emergent	Emergent	Planned	Planned/Emergent
4.	Strategic type	Reactors	Reactors	Reactors	Differs by profession	Prospectors/Defender
5.	Risk Attitude	Majorly Managers	Maximisers/Managers	Managers	Managers	Maximisers/Managers
6.	Corporate strategy	Consolidation	Expansion	Expansion	Expansion	Expansion
7.	Business strategy	Differentiation	Differentiation	Differentiation	Differentiation	Differentiation/Differentiation-Focus
8.	Growth strategy	Partnerships/Mergers	Partnerships	Partnerships	Partnership/ International expansion	International expansion
9.	Knowledge acquisition process	Planned/Emergent	Emergent	Differs by profession	Planned/Emergent	Planned/Emergent
10.	Planning horizon	Ad-hoc	Annual	Ad-hoc	Annual/Ad-hoc	Annual, Biennial & Triennial

7.6.3 Firm Age

This subheading explores the effect of age on the strategic decision-making process.

7.6.3.1 Firm Age Less Than Five Years (Post-Recession)

These are firms that were created during the period of return to growth (2013+). Their strategy processes are explored in detail in Table 58. The strategic typologies of firms within these age bracket is primarily analysers and reactors. Miles and Snow (1978) posited that having any strategic type (except reactors) is often characteristic of firms who go on to become successful in any environment, given that the firm acts consistently in all areas of its operation. The coexistence of different types of strategic types is not something negative, but rather contributes to continuous improvements in certain environments (Miles et al., 1993). Thus, the fact that these firms are a mix of analysers and reactors is beneficial to them, as they can make use of market strategies for enhanced competitive positioning (Mazzarol, Reboud & Soutar, 2009).

Table 58 Overview of the strategy process in firms < 5 years old (recovery/stability)

Measures	ARCH	ENG	QS
Approach to strategy	Emergent	Emergent	Emergent
Firm size	Small firms	SME	Small firms
Owner ship structure	Private limited company	Partnership/Private limited company	Sole proprietorship
Strategic types	Reactors	Analysers/Reactors	Analysers
Risk attitude	Managers	Maximisers	Managers
Corporate strategy	Expansion	Expansion	Consolidation
Business strategy	Differentiation	Differentiation	Differentiation
Growth strategy	Partnerships	Partnerships	Partnerships
KA Process	Planned	Planned/Emergent	Planned
Planning horizon	Annually	Ad-hoc/5-10 years	Ad-hoc
% having written plan	38.89	0.00	14.29

Table 55 highlights that most of the firms established post-recession are SMEs, and predominantly privately owned. These firms are mostly analysers and reactors, with their corporate goal focused on expansion, while their business objectives is primarily differentiation. These firms also select the strategic partnerships as their preferred growth strategy and undertake a planned approach to knowledge acquisition. The implications of these may be that there is a reluctance by firms to become publicly listed, as most of the firms less than 5 years old are sole proprietorships, partnerships or privately owned. Another key finding is that these firms are expanding, which further confirms that the improving prospects in the sector, in line with the findings in the review in chapter 2.

The frequently selected timeline for revising strategic decisions is flexible (ad-hoc) or as often as required, meaning that the firms do not have any structured timeline for reviewing/amending their strategic plan. For more details about the firms less 5 years old, see Appendix U.

7.6.3.2 Firm Age Between Six and Ten Years (survivors)

These firms are those established during the recession that ensued between 2008 and 2013. These firms are majorly publicly owned firms and reactor firms as shown in Table 59. The fact that this group tend to be reactors implies they may be slower in taking advantage of new market opportunities possibly due to limited resources and risk-aversion (Sherman Rowley and Armandi, 2007). That this firms are reactors was unexpected, given the fact that they witnessed the difficult recessionary period between 2008 and 2013. It also suggests that these firms prefer to respond to the business environment rather than innovating and driving industry change.

More on firms created between this time periods is highlighted in Table 59.

Table 59 Overview of the strategy process in survivor firms

Measures	ARCH	ENG	QS
Approach to strategy	Emergent	Emergent	Emergent
Firm size	Small firms	Small firms	Small firms
Ownership structure	Sole proprietorship	Public/Partnership/ Private	Public
Strategic types	Analysers/Reactors	Reactors	Reactors
Risk attitude	Managers	Maximisers/Conservators	Managers
Corp. strategy	Expansion	Consolidation	Expansion
Business strategy	Differentiation	Differentiation-focus	Differentiation
Growth strategy	Partnership	Partnership	International Expansion
KA Process	Industry-driven	Emergent	Planned
Planning horizon	Annual	Annual/Ad-hoc	Annual
% written plan	30.77	16.67	6.25

From the data in Table 59, it is evident that the firms are still slightly within the risk seeking spectrum (being predominantly managers), while undergoing expansion. Only the consulting engineering firms within this age bracket have a different risk profile and business strategy from the other two. It is no surprise to see that engineering practices are a blend of *maximisers/conservators*, while adopting differentiation-focus business strategic choice. This may be due to having witnessed the potential for growth possible in the peak period, and the downward trend during recessions; the firms have learned to blend a risk-taking/conservative outlook, while innovatively differentiating service offerings via focus on key competencies.

The preferred business strategy of the other two professions (ARCH and QS) in this age bracket is differentiation, while their most frequently selected path to growth is via partnering. These firms have a mix of knowledge acquisition approaches, and favour the

annual time horizon for reviewing their strategy. A very small number of firms under this node have a written strategy, with QS firms having the least number of firms with a written plan. The reason for this may be that these firms have weathered the storm of a previous recession (circa 2008-2012), and the methods used for pulling through the recession may be already embedded in the company, reducing the need for a formalised, written strategy.

More information about this analysis is available in Appendix V.

7.6.3.3 Firm Age Between Eleven to Fifteen Years (during peak period)

These are firms that were founded during the peak period (2002-2007) in the Irish economy. The data in Table 60 highlights these firms had a largely emergent approach to strategy across all professions, despite been founded during a period of sustained and elevated economic growth.

Table 60 Overview of the strategy process in firms established during the peak

Measures	ARCH	CE	QS
Approach to strategy	Emergent	Emergent	Emergent
Firm size	Small firms	Small firms	Small firms
Owner ship structure	Private	Partnership	Public
Strategic types	Reactors	Reactors	Reactors
Risk attitude	Managers	Managers	Maximisers
Corporate strategy	Expansion/Consolidation	Expansion/Consolidation	Expansion
Business strategy	Differentiation	Differentiation-Focus	Differentiation
Growth strategy	Partnership	Partnership	Partnership/Acquisition/Intl. expansion
KA Process	Planned/Emergent/Industry driven	Emergent	Planned
Planning horizon	Ad-hoc	Annual	Annual
% written plan	25.00	50.00	14.29

The data above suggests that being emergent may have played a crucial role in the survival of these firms during the recession. The majority of the firms founded in this time period are reactors (see Table 60) and these firms (founded in the period 2002-2007) are primarily risk-seeking, and have a diverse ownership structure comprising of public, private ownerships and partnerships. The firms established in this period are currently undergoing expansion, and doing so mainly via partnerships. Their planning horizon is also predominantly on an annual basis, and business strategic choice is differentiation. In addition to this, these firms select strategic partnerships as their chief growth strategy, while their knowledge acquisition process is a split between planned and emergent. Further detailed analysis is contained in Appendix W. These findings provide a unique insight pertaining to the strategic decision-making process of firms established in different periods.

7.6.3.4 Firm Age Greater Than 15 years (Celtic tiger years)

"Celtic Tiger" (Irish: An Tíogar Ceilteach) refers to the years when the economy of the Republic of Ireland witnessed rapid real economic growth (mid 1990's to 2006). The firms analysed in this section are those founded before 2002. The data in Table 61 highlights that most of these firms adopt an emergent approach to planning, with a diverse ownership structure across professions, and mostly more than 20 years old. They are primarily defenders in their strategic typology and managers in risk attitude, with the majority of them undergoing expansion. These firms are what Olson, Slater and Hult (2005) called "Differentiated Defenders", who direct their products or services to stable segments of the total market. They are different from the other firms in earlier age groups primarily in their strategic type as defenders, as younger firms are primarily differentiated-reactors or analysers (more detail in Table 61)

Table 61 Overview of the strategy process in firms established during Celtic tiger years

Measures	ARCH	ENG	QS
Approach to strategy	Emergent	Emergent	Emergent
Firm size	Small firm	Large enterprise	Small firms
Ownership structure	Private	Partnership	Sole practitioners
Strategic types	Defenders	Defenders	Reactors
Risk attitude	Managers	Managers	Managers
Corporate strategy	Expansion	Expansion	Consolidation
Business strategy	Differentiation	Differentiation-Focus	Differentiation
Growth strategy	Partnership	Partnership	International expansion
KA Process	Planned/Emergent	Emergent	Planned
Planning horizon	Ad-hoc	Annual	Ad-hoc
% written plan	26.19	53.33	22.58

From Table 61, firms established in the Celtic Tiger years being mainly *defenders* means they have affinity to provide outstanding service and high quality, rather than offering the lowest price in order to maintain control of the market through superior service quality, which happens to be a key quality of PSFs. Seeing that these firms were created in the Celtic Tiger years and have managed to survive until the time of data collection, suggested that they have maintained their status as “*differentiated defenders*” in order to survive in the competitive Irish market. This implies that the firms have focused on defending their market share, while differentiating service offerings. Another key finding is that these firms favour partnerships as the preferred growth strategy, suggesting that collaborating may have been a critical factor in the survival of these firms through various economic cycles.

The analysis has shown that firms established during the Celtic Tiger years are markedly different from those created during the peak, recession and return to growth, particularly in their strategic typologies. Celtic Tiger firms are primarily defenders, while the other firms established after this period are predominantly reactors. This might be because they (firms established during Celtic Tiger years) witnessed the boom and severity of the crash, and being reactors may have been the reason they managed to survive the crash. This data, however, must be interpreted with caution because the state of the economy in these time periods were quite different, and the recessionary economic cycle may have contributed to firms created between the three latter time periods shifting to being reactors. Miles & Snow (1978) outline that reactors are poor performing firms, thus supporting the earlier assertion in the literature review about construction organisations in Ireland performing sub-optimally. A breakdown of the full dataset on these firms is available in Appendix X.

The comparison of the construction PSFs based on firm age, exploring their similarities and differences in headline strategic choices are presented in Table 62. The comparative analysis table is plotted using the maximum data/most frequently selected option from each of the individual analyses (i.e. data from the analysis of firms across all ages).

7.6.3.5 Comparative Analysis: Firm age

Table 62 Comparative analysis of firm age of CPSFs

S/N	Variables	<5 years	6-10 years	10-15 years	>15 years
1.	Strategic type	Analysers/Reactors	Reactors	Reactors	Defenders
2.	Ownership structure	Private	Diverse	Diverse	Diverse
3.	Size	SMEs	Small	Small	Small/Large
4.	Approach to strategy	Emergent	Emergent	Emergent	Emergent
5.	Risk Attitude	Managers	Managers	Managers	Managers
6.	Corporate strategy	Expansion	Expansion	Expansion	Expansion
7.	Business strategy	Differentiation	Differentiation	Differentiation	Differentiation
8.	Growth strategy	Partnerships	Partnerships	Partnerships	Partnerships
9.	Knowledge acquisition process	Planned	Dynamic	Planned	Planned/Emergent
10.	Planning horizon	Adhoc	Annual	Annual	Adhoc

7.7 Summary Of Quantitative Data

This part of the study (stage I) conducted an extensive analysis of the strategy process in construction PSFs, and the data is summarised in Table 63, highlighting the highest-ranked options selected across all three professions.

Table 63 Key comparisons of all three professions (AES) based on the highest-ranked values

Metrics		ARCH	ENG	QS
Size		Small (<10 people)	Small (<10 people)	Small (<10 people)
Ownership structure		Private Limited companies	Partnerships	Sole practitioners
Number of years in business		> 20 years	>20 years	> 20 years
Primary area of work		Residential	Public/Private non-residential	Private/public residential
Approach to strategy		Emergent	Emergent	Emergent
Strategic type		Reactors	Reactors/Defenders	Reactors
Attitude to risk		Managers	Maximisers	Managers
Corporate strategy		Expansion	Expansion	Consolidators
Business strategy		Differentiation	Differentiation-focus	Differentiation
Primary growth strategy		Strategic partnership	Strategic partnerships	International expansion
Decision making characteristics	Internal	Repeat business	Repeat business	Repeat Business
	Evaluation	Setting clear numerical targets	Setting clear numerical targets	Informal communication streams
	External	Competitor analysis	Competitor analysis	Construction industry analysis
KA characteristics	People	Training/Development of staff	Utilising client feedback	Utilising client feedback
	Process	Contagion driven	Contagion driven	Contagion driven
	Technology	To maintain competitive position in industry	To maintain competitive position in industry	Business process improvement
Planning horizon		Annual/Ad-hoc	Annual/Ad-hoc	Annual/Ad-hoc
Planning formality		Most do not use strategy tools, with many lacking a written plan.	Most use strategy tools, with a large number having a written plan.	Most do not use strategy tools, with majority lacking a written plan.

In stage I (QUANT analysis), a vast range of strategic decision-making characteristics, strategic choices, knowledge acquisition, and strategic choices, not only for the three individual professions, but across the three (AES firms). It is important to understand how and what strategic decisions are made in PSFs as they are required to collaborate on construction projects. The firm's approach to strategy, risk attitude or company goals (strategic choice) will filter into the construction project team, making it critical knowledge contribution for practice. Understanding how and what strategic decisions are made is crucial to AES firms as they are required to collaborate on construction projects, and yet not well understood on a strategic level.

The reported findings in this stage proves critical for the next stage of the study, as more in-depth insights into the decision-making process is sought to confirm or reinforce the results in this phase.

8. QUALITATIVE DATA ANALYSIS AND DISCUSSION

8.1 Introduction

This chapter presents the findings from the qualitative stage of the study. The data analysis framework, as defined by Miles and Huberman (1994) is outlined in Chapter 6.

This framework was adopted in the analysis of the data from the qualitative stage of the study, and findings synthesised with that of stage 1 (quantitative data) to develop a framework for strategic decision-making that can be adopted across all three professions.

The systematic step-wise recursive process proposed by Braun and Clarke (2006), was infused with the initial framework of Miles and Huberman (1994) and formed the basis for the thematic analysis of the data to identify repeated patterns of meaning relevant to the study.

Figure 20 outlines the breakdown of the qualitative analysis stage of the study, which was designed on a similar thematic basis as the quantitative analysis.

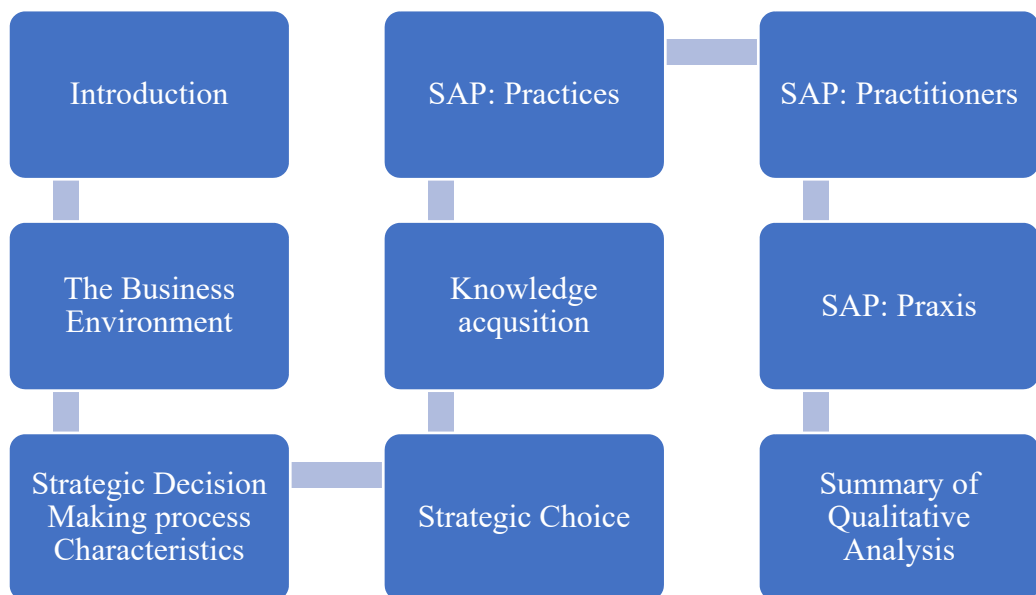


Figure 20 Map of the quantitative analysis stage of the study

Stage I of the fieldwork (cf. Chapter 7) presented the findings from the quantitative analysis, and in order to garner further insight into the findings and to support the data collected in the first stage, the qualitative stage, involving semi-structured interviews was undertaken. Semi-structured interviews were undertaken with a senior manager/director across the three professions as follows:

Profession	Number of respondents
Architects	9 (1 respondent per firm)
Consultant Engineers	9 (1 respondent per firm)
Quantity Surveying	9 (1 respondent per firm)

Findings from all seven phases of the data analysis as recommended by Miles and Huberman (1994) are synthesised on a thematic basis as recommended by Braun & Clarke's (2006) proposition for thematic analysis.

The chapter concludes by linking the findings of Stage I to Stage II and are critically analysed in the context of the overall research questions and objectives.

8.2 The Business Environment

The business environment within which construction firms operate in Ireland is one characterised by considerable cyclical fluctuation (see Chapter 2). For contextual purposes and as mechanisms to build a rapport with interview respondents, it was deemed appropriate to gain deeper insights into their experience through the economic and construction cycles.

8.2.1 Past (Period 2009-2013)

In this section, the interviewees were asked how their firms survived through the recession and measures they are taking for “proofing” their businesses against future economic cycles. Figure 21 presents the findings from this portion of the study. The findings are examined together and not individually, as AES firms operate within the same business environment and are affected by similar market forces. Three main themes emerged from the data on how the recession affected the business environment namely: survival strategies, turnaround strategies, and futureproofing strategies.

The data in Figure 21 suggests that, in relation to the period of recession, several respondents focused adopted survival strategies for the most part, while future-proofing strategies were adopted least. Firms were mainly concerned with survival, rather than considering their long term future direction. Furthermore, internationalisation and public sector work were undertaken by many firms, which helped to achieve turnaround during the recession (particularly important for competing with public sector projects). While international expansion strategies are important, the type of global internationalisation strategies pursued, and relative success of same, lay beyond the scope of the research, and were therefore not addressed in detail.

The data in Figure 21 was coded into the NVivo node (number 1.4 in Appendix I), and one of the quotes coded into survival strategies (downsize/retrenchment) is included below:

“ So, at the end of 2008 the first thing we did was we recognised that there were a lot of outstanding debts that would never be paid. We made a decision and we said we will now recognise that these debts will never be paid and we will take the consequences of that. What that means was effectively over an 18-month period we would have reduced from being a 210 person practice down to about in the order of about 100.”- LA1

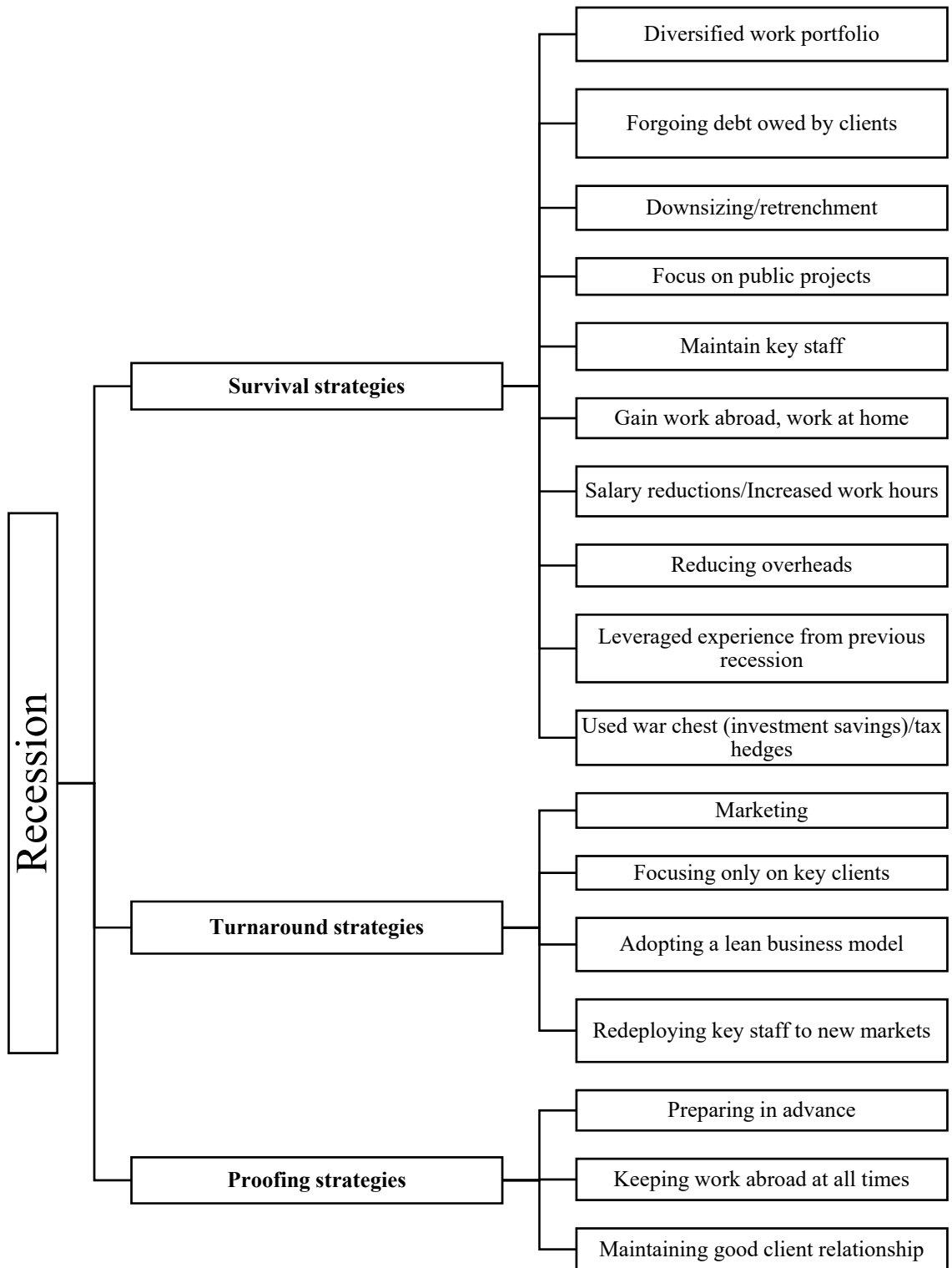


Figure 21 Recession node coded into node 1.4 (Appendix I)

Not all quotes used in developing Figure 21 is included in this section for brevity, but the key themes from responses are outlined for analysis. The strategies adopted by construction PSFs in handling the 2008 recession has been highlighted in Figure 21, and although Tansey et al. (2017) had earlier discussed turnaround strategies of large contracting firms within the Irish construction industry, there has been no study addressing construction PSFs.. There is a potential for future research that investigates strategies in place to protect firms against recession, e.g. building a financial war chest as contained in Figure 21, adopting a lean business culture etc., in advance of economic downturns. These choices undertaken by firms may have been responsible for their survival within the then recession battered industry.

8.2.2 Current (Economic Growth)

The key issues arising from interview respondents pertaining to the current (growth) phase of the economic cycle are outlined in Table 64. The most significant issue faced by CPSF's is the skills shortage, which show a relationship with the findings of other industry reports discussed in Chapter 2. By nature, business environments are unpredictable and require firms to plan strategically (Johnson et al., 2012). The unpredictability of the business environment and acute labour shortage are pertinent issues relevant to Irish PSFs and are critical issues that must be addressed.

Other issues highlighted by respondents include the cost of project procurement and overt focus on large projects within the sector. Gueguen (2001) posits that when examining the business environment, one must examine the industry in terms of complexity, dynamism, uncertainty, and turbulence. These areas of analysis recommended by Gueguen (2002), blended with other emerging themes from the current business environment are outlined

in Table 64. The table presents an aggregation of themes coded from the business environment/recession nodes (Nr. 1.3 and 1.4), and the description column provides a summary of data coded from direct, evidence-based quotes in the interviews. A full breakdown of the codes in this section is included in Appendix I.

Table 64 Current Issues in the Irish Construction Business environment

	Determinants		Description
	Nature of the business environment	Industry	Turbulence
Febrile			Huge uncertainty in the Irish Market
			No reward of loyalty to clients
			High level of litigation cases in construction
			Brexit, inflation and market risks
Digital disruption			Building Information Modelling, Paperless processes, e-bidding
New opportunities			Innovative construction work and access to data
		Fee potential increasing and opportunities for specialisation	
		Strong industry growth forecast	
Clients		Trouble raising funds	Several construction clients are having trouble accessing funding and are also exposed to high risks.
		Less decisive	Clients in the Irish market are exercising extreme caution and are less decisive in initiating projects
		Specific market focus	Clients in Ireland are perceived to have focus on certain markets e.g. residential, offices etc.
		Foreign clients	Foreign firms have only short-term commitment to Ireland i.e. prone to pull projects when faced with slightest shocks
		Strong local focus	Most firms seek repeat business locally as opposed to seeking new opportunities in international markets
Projects		Labour shortage	Difficulty in finding graduates with 3-5 years' experience/Difficulty in attracting graduates
			Wage inflation
			Increased employee mobility
			Lack of quality graduates
		Large project focus	Focus on greater Dublin Area
			Emphasis on large projects
	Slowdown in projects	Slow rate of work pickup	
		Public sector work delays	
	Procurement processes	Expensive procurement process	
Several projects priced at cost			

The comments outlined in the table above were coded to reveal an overview of current issues in the sector not linked to specific areas of the strategic decision-making process. Having outlined the current issues facing the construction sector, expected trends in the future that might affect strategic decision-making are also considered.

8.2.3 Future (Post-2019)

This subtheme outlines the data on the business environment related to the future of work and professional practice within construction in Ireland. The findings were drawn from the data coded from the business environment node, and address critical future issues that will affect strategic decision-making. Ten key issues were identified from the responses across PSFs, outlined in Table 65.

Table 65 Critical determinants in the Future Irish Construction Industry

Topic	Firm type	Explanation
Leadership	Large ARCH	Need for architects to stay relevant and maintaining their leadership role in design teams. A lot of other professions are contending for the lead role.
Skills	Small ARCH	Need to deemphasize study time and balance it with soft skills (e.g. how to read a balance sheet or work in Excel).
	Medium QS	Academic skills, coupled with leadership, IT know-how and critical thinking. Dearth of employable graduates.
	Small QS	Lack of strategic thinking in QS graduates
Technology	Small ARCH	Need for architects to develop broader technological skillset and embrace technology more.
	Large ARCH	Costs time and money to upskill staff in tech tools for construction
	Large ENG	Technological capabilities will be key to recruiting future talent
Diversity and portfolio approach to projects	Small ARCH	Diversity and a portfolio approach to practice, as putting all the eggs in one consultancy practice is not going to help people survive. To survive firms need at least 10 to 12 people who are specialised in certain key areas.
Education	Medium ENG	Bad quality of maths teaching in secondary schools has led to lesser number of students choosing an engineering career.

Knowledge & Collaboration	Medium ARCH	There is a need for professionals to be well-rounded in terms of knowledge and be open to collaborate with peers and other professionals in the business environment
Procurement	Small ARCH	The main challenge in the future is related to forms of procurement and how projects are procured, especially in government contracts.
HR/Recruitment	Large QS	Hiring good people and having the right process in place to support them. Staff mobility and mentoring is also a huge issue.
	Medium ENG	Need for more emotionally intelligent graduates, with interaction and relational skills.
	Large ENG	Flexible HR process and lack of understanding of changing roles
Climate change	Large ENG	Managing climate change will be the most critical element for PSFs. Countless opportunities exist in offshore wind energy, the Atlantic wave energy, and health/sanitation.
BREXIT	All professions	Brexit and technological disruption are considered as the most critical issue facing CPSFs in Ireland.

The ten themes summarised in Table 65 outline the key future trends shaping strategy in CPSFs in Ireland as put reported by respondents. The theme related to skills, technology and strategic human resourcing recorded the highest number of nodes, meaning that these three areas are what respondents perceive as being most important strategic issue in the future of CPSFs.

One of the key issues identified under the skills theme is the need to teach more soft skills to students, apart from the technical skills being taught currently in Irish universities. This is a key finding/recommendation for the contribution of the research, especially in relation to knowledge acquisition for construction PSFs. Additionally, there is a clear need for management and leadership training (evidenced by the comment from the medium QS firms on the need for professionals to be more skilled in leadership and critical thinking). There is now a clear need for strategic focus on third level and CPD programmes for

construction related courses, particularly in the AES courses.

As is evident there are a vast array of factors impacting the internal and external business environment within which CPSF's work. The impact of these dynamics on the strategic decision making process is addressed in the following section.

8.3 Strategic Decision Making Characteristics

To ensure comparability with Stage I of the research, the characteristics of the strategic decision making process under scrutiny include strategic approach, time horizon, and risk attitude.

8.3.1 Approach To Strategy

The data in this section was coded along the dimensions of the firms' approach to strategy and these were coded into planned/deliberate or emergent approach based on Mintzberg & Waters (1985) classification. The codes adopted are contained in node 4.1 in Appendix I, and the results show that the firms with a planned/deliberate approach to strategy exceeds those with an emergent approach.

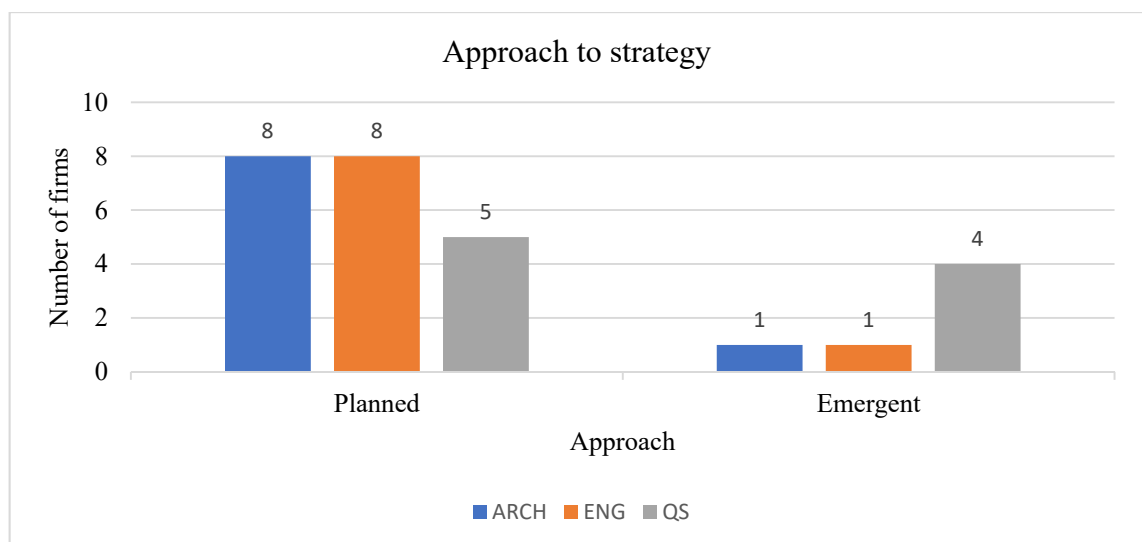


Figure 22 Approach to strategy

The structured nature of planning shown in Figure 22 may be unknown to the strategists themselves, but the findings indicate that the approach to planning within PSFs is mostly structured. This begins to differ to the findings obtained in stage I. The reason for this can be attributed to the nature of the sample. In stage I (QUANT), small firms outnumber large firms (*small: 161 firms, medium-41 firms, large- 23 firms*), while in stage II, large firms are more than small firms. This further outlines the effect of firm size on the strategic decision-making process of construction PSFs.

In addition, architectural and engineering firms have a greater degree of planning to their approach, followed by engineering and surveying firms. A breakdown of the data is outlined in Table 66, which also shows the predominance of large firms, which may explain the divergence from the findings in stage I.

Table 66 Stage II: Approach to strategy

Approach	Profession	Firms
Planned	ARCH	Large: LA1,LA2 Medium:MA1, MA2 Small: SA1,SA3, SA4, SA5
	ENG	Large:LE1,LE2, LE3, LE4, LE5, LE6 Medium:ME1, ME2
	QS	Large: LQ1,LQ2 Medium:MQ1, MQ2 Small: SQ3
Emergent	ARCH	SA2
	ENG	SE1
	QS	SQ1, SQ2, SQ4, SQ5

From the data in Table 66, it is clear that large and medium-sized firms are more disposed to have planned approach to strategy. It is also clear that architectural and engineering firms tend to adopt a planned approach to strategy above QS firms.

An example of the planned processes taken towards strategy is indicated in the example

is given below:

“...each year and we’ll talk about this in more detail now, we go through a very kind of detailed business planning process.....we recently had what we call MAD, Management Away Day. So MAD 2019 was a few weeks ago and we had a facilitator in for that and we spent a lot of time talking about this [strategy]. So we’re going through a number of processes at the moment using external support to go through our mission statement, the strategy, how to get there, et cetera, et cetera.”- MQ2

From the statement above, management away days is one of the planned approaches employed by the firm in question. For the purpose of gaining further insights into the other approaches to strategic decision-making undertaken by firms, the data was synthesised together in Table 67.

Table 67 Insights into approach to strategy

Approach to strategy	Description
Planned	Management away days
	Weighing resources (Time, reputation)
	Financial planning
	Portfolio approach to projects
	Productising service offerings
	Design competitions/Gaining recognition for work
	Controlling risks
	Performance monitoring within agreed timelines.
	External facilitators for visioneering/setting goals
Emergent	Still recovering from fallout of the recession, not paying attention to planning strategy
	Family-based inclusive business model, not focused on financial performance alone.

In Table 67, the examples of planned approaches taken by firms and emergent is presented. A reason why small firms are less disposed to planned approaches may be availability of resources.

“Yeah, I don’t think we have anything as ambitious as that formally kind of stated.

But I suppose if you'd asked us five years ago what the practice would like to be known for, we'd say for having work. Because we didn't have much during the recession. So, the fact that we have work now in the last couple of years is a big change.” – SA5

The quote above provides crucial insight pertaining to the approach to strategic decision making. In particular, for small firms it may be due to the fact that while their approach is emergent, there is no concrete desire to formalise the process going forward. In this instance, the respondent noted that there is also no desire to increase the size of the practice in the future (aligned to “Stability” corporate strategy discussed in section 8.4.1), thus a link between approach, practice size and corporate strategy is apparent. An additional similarity between approach to strategic decision-making and strategic type was identified earlier (see section 3.5.2), which is examined in the next section.

8.3.2 Formality Of Planning (written or not)

Under this theme, firms were asked whether they had a written strategy or not, similar to the process undergone in Stage 1. The findings from this portion of this survey were coded from the “Written plan” node, which was coded from the data from respondents. Table 68 below outlines the data from this portion of the study:

Table 68 Formality of Planning

Formality	Firms
Written plan	LA1, LA2, LE1, LE2, LE3, LE4, LE5, LE6, LQ1, LQ2, MA1, MA2, ME1, ME2, MQ1, MQ2, SA1, SA4, SQ3, SQ5
Not written	SA2, SA3, SA5, SE1, SQ1, SQ2, SQ4

The findings in the written plan were coded from transcribed texts from the interviews

and examples are given below:

“We have a five-year [written] strategy. It has six pillars or objectives. So, we have a purpose as well.”- LAI

Some practices have their strategy written in the form of a mission/vision statement:

“I suppose the nearest is the company mission.... The nearest to a vision statement is I suppose that we’ve always, from the very start, emphasised a merger, if you like, between construction and design.”- MAI

The data from this node shows that all the firms with a formal, written plan are predominantly large and medium firms, with only small firms in the unwritten plan category. This means that size plays a crucial role in the formality of planning.

Some examples of firms without a written strategic plan is outlined below:

“It’s not clearly formulated, yeah. I communicate that that’s what this is about in very, probably ambiguous terms. It’s not very clearly stated but I think it is stated.”- SA3

“No, it’s not formally written down. Everyone has an idea of where the company wants to be”-SEI

The quotes above shows that in small firms, while strategic decision-making and planning occurs in some form, it is not clearly or formally articulated. That further adds to the argument that firm size impacts on formality of planning, given the data in this section. It also points to the fact that the larger a firm, the higher the probability that it will have a formal, written plan in place. O’Regan & Ghobadian (2002) outline that having a formal strategic plan in place allows for a deliberate means to include factors and techniques in

a systematic way that makes tasks achievable. Hence, the availability of a structured, written plan may be critical to the achievement of corporate objectives.

Whether an organisation undertakes a formal, structured approach resulting in a written strategic plan or whether the process is informal, unstructured may depend on the nature of the strategist involved in making strategic decisions. Given the ongoing debate regarding the influence of the strategist on the decision-making process, it is appropriate to explore the effect that the strategic type of the strategist has on the decision making process.

8.3.3 Strategic Type

The data coded into this node was primarily from question 1a (see Appendix C) of the qualitative questionnaire, where the strategists were asked about their strategic typologies using similar line of questioning from Stage I. A sample of the line of questioning is outlined thus:

Interviewer – *“So would you say you are someone who prefers your practice to defend its market share (defender) or you sit back and analyse the market first before taking decisions (analyser)? Or would you reckon that you would favour prospecting for work in current/new markets (prospectors), or you simply react based on events/happening in the sector (reactors)?”*

From the question above, the responses of the interviewees are recorded and then coded into the strategic type node. The primary strategic typology linked to CPSFs in the sample is prospectors as shown in Table 69. These findings supports the *expansion* corporate strategic option selected by the firms, further validating the findings. Only SME firms are

primarily defenders, whose primary focus is on cost control, maintaining stability and service delivery process innovation (Parnell et al., 2015).

Table 69 Stage II: Miles and Snow (1978) Typologies

Strategic type	ARCH	ENG	QS	Total
Analysers	SA1, SA4, SA5	LE3, LE5	MQ2	6
Defenders	MA2	ME2	SQ1, SQ2, SQ4	5
Prospectors	SA2, SA3, LA1, LA2	LE2, LE4, LE6, ME1, SE1	SQ3, MQ1, LQ1, LQ2	13
Reactors	MA1	LE1	SQ5	3

From Table 69, the majority of the firms in the sample are classified as prospectors, again diverging from the findings in the quantitative stage in which the primary strategic typology was the reactor typology. The primary reason for this has been previously identified as the change in the proportion of large firms in the sample size (i.e. in the QUAL stage, number of large firms > small firms). Therefore, the reason for this difference is justified.

The second-largest category within the sample was analyser firms, who focus on exploiting new products and market opportunities, while simultaneously maintaining the firm base of secure customers, products and skills (Garrigós-Simón, Marqués & Narangajavana, 2005). Next, are the defender firms which are only SMEs. These firms become defensive in their strategic typology and they require concentrating on ongoing strategic challenges rather than potential markets (Parnell et al., 2015). Cabrera et al. (2008) also argued that defenders are often left with no option than to compete on a low-cost basis, however since no firm in the sample selected the low-cost/cost-leadership options. An analysis of business strategy is provided in section 8.4.2

The findings in this section are in line with the planned approach, and formalised structure observed in the qualitative phase. Firms who are primarily prospectors are expected to formally plan to enter new markets and seek opportunities, hence the findings are congruent.

Miles and Snow (1978) suggested that organisations adopting clear strategies (i.e. prospectors, defenders, and analysers) typically outperform those without one (i.e. reactors), yet the link between the predominant prospector strategic type in this phase of the study and performance remains an area warranting further analysis.

The strategic typology of firms is linked to their risk attitude, and the next section of the interviews was concerned with the risk attitude of strategists, and how this affects the strategic decision-making process.

8.3.4 Risk Attitude

Using the four broad types of risk attitudes proposed by Ingram & Thompson (2012), the respondents were classified into different risk profiles based on self-identification. Pragmatists and managers were the highest-ranked risk attitudes, having eight respondents respectively, followed by maximisers (6) and conservators (5). Manager firms seek to "manage" risk via taking necessary steps to mitigate it, but that does not necessarily stop them from exploring opportunities.

The data presented in Table 70 outlines that while the majority of the architectural and engineering practices are risk-seeking, most QS firms are risk-averse. A possible explanation for this may be that the QS has responsibility for the budget of the project thus demonstrate more prudence in terms of taking risks. Architectural and Engineering firms may be more open to taking risks as their work is mostly design centric, and not

finance related.

The managers' category has the most significant number of firms in it, and the overall split of the data shows that the firms are more risk-seeking broadly.

Table 70 Stage II: Risk Attitude

Risk Attitude		ARCH	ENG	QS	Total
Maximisers		SA4, MA1, LA2	LE2, LE4	MQ1	6
Managers	Risk seeking	SA1, LA1	LE1, LE3, SE1	SQ5, MQ2, LQ2	8
Conservators	Risk Averse	SA3, MA1	ME2	SQ4, LQ1	5
Pragmatist		SA2, MA2	LE5, LE6, ME1	SQ1, SQ2, SQ3	8

A recurrent theme among the risk seeking respondents within the *manager* risk profile was a sense amongst interviewees that while they were not risk averse, they take steps to ensure that they take calculated risks.

One participant commented:

“We certainly not risk-averse. I think by the nature of what we’re doing you can see were not because not everybody has the wherewithal to go international. That is a big decision that costs a lot of money so were certainly not risk-averse. We tend to be quite careful though because for example, every project, the moment it comes in we have to have what we call a ‘Go, no-go meeting’. So, we assess the value of the client.”- LA1

Another interviewee alluded to the notion of staying in the middle region of the risk seeking spectrum:

“We would generally engage in middle risk; we have done high-risk projects, we

don't shy away from high-risk projects. But as a small firm, high-risk projects tend to go more to the bigger firms. But yeah, we have done high risk and only recently, and actually currently working on two high risk projects. But yes, we don't...I would say we're middle risk.”- SE1

From the data above, it is evident how the themes were coded throughout the dataset. More of the large firms in the study select the managers' risk attitude ahead of the pragmatic risk attitude, while conservators are mainly SMEs. This concurs with findings from Stage I, where SMEs tend to be risk-averse, while large firms are mainly risk-seeking.

In order to outline differences based on risk attitudes, Figure 23 further groups the respondent firms into either *risk averse* themes or *risk-seeking* themes.

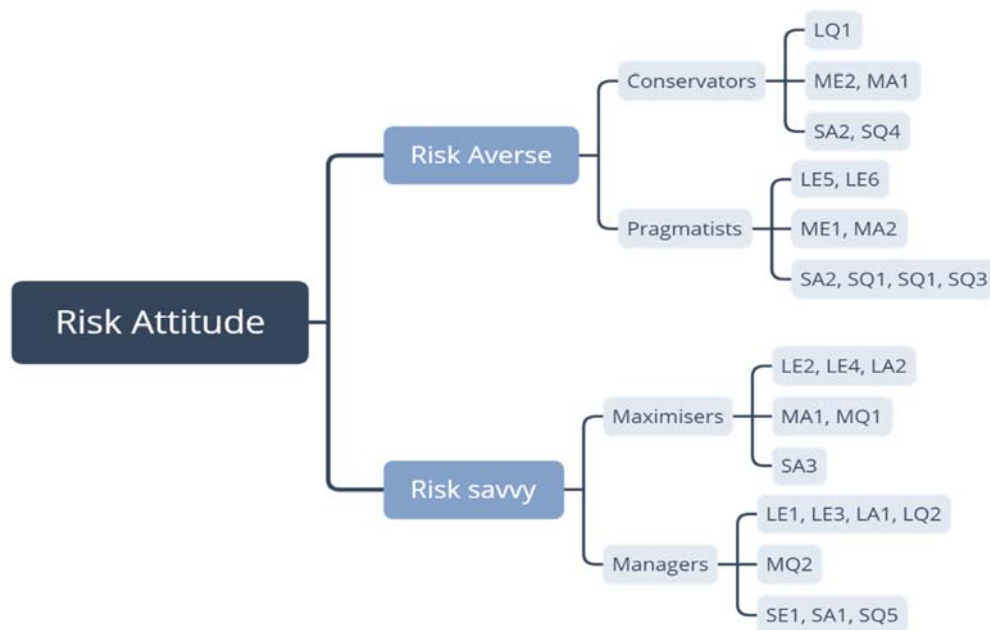


Figure 23 Stage II: Risk Attitude

Figure 23 shows that the majority of large firms tends towards the risk-seeking spectrum, particularly large architectural practices. On the other hand, SMEs tend to fall within the risk-averse spectrum with a small number of exceptions, thus validating the findings from Stage I.

Harland et al. (2003) outline that risk attitude changes with experience, i.e. an individual or firm used to taking risks may change their attitude after experiencing shocks or substantial losses, which was clearly the case in Ireland between 2008-2013. Murphy (2012) had that most of the QS firms were predominantly risk-averse. However, the current study has shown a change in risk attitude of firms in the industry, suggesting a shift in the risk attitude of firms in the industry, i.e. CPSFs have become less risk-averse. Supporting the premise put forward by Harland et.al (2003).

The Farmer report (2016) emphasised the risk-averse nature of the construction industry, and this continued caution on the part of Irish firms may be due to the aftershocks of the recession. Although, Seaden et al. (2003) explained that smaller firms in construction tend to be more risk-averse, as they do not have the capacity or safety net to absorb shocks posed by risks. Respondents were clear in their communication of risk attitude, particularly in the case of risk averse respondents as may be seen from a number of comments, including:

“I wish I was more risk savvy but I’m probably a bit too risk-averse, I think. Yeah. As a result of experience. Direct experience. Physical, painful, long hard experience. The recession. Yeah. I’ve still not recovered. Frankly, I’m not really recovered.” – SA3

Another respondent clearly stated the impact of previous experience on their risk attitude by noting that:

“...we are risk-averse. Because taking risks isn't really worth the hassle....Because we got burnt so many times. Badly burnt. If someone decides not to pay you, there are 100 reasons why they can avoid paying you...” – ME2

Another interviewee from a large practice noted the relationship between risk and organisational culture by saying:

“I would say [we are] generally risk-averse. As part of the culture of the organisation. So if you do something and you make €10,000 in Ireland, but you lose ten million internationally, it's not good....Yes, and that risk profile is imposed on us because we have to get approvals at different sections and follow different rules.” –LQ1

From the quote above, it is evident that risk attitude is tied in with organisational culture, pushing culture to the fore again here. If an organisation's profile is set to risk averse, the strategic decision-making process will follow suit.

Another important finding within this research is that all professions and firm sizes are represented across all risk profiles (i.e. both risk seeking and risk-averse), and similar to the Stage I findings, the predominant number of firms in the population are risk-seeking. This further reinforces the findings in the quantitative stage, but the interview respondents provide further context and insight into risk attitude.

As is evident, the characteristics of the strategic decision-making process change over time, however so too does the planning timeframe itself. In the next section, the timeframe for strategic decision-making is considered within the changing construction sector business environment.

8.3.5 Time Horizon

The time horizon explores the time interval that lies between the making of a strategic plan and/or its revision. The data is presented in Table 71, which provides confirmation

that the majority of firms revise their strategy on as often as required. This supports findings from Stage I. Firms with a cycle of less than a year follow the adhoc planning cycle or annual cycles (see Table 71).

Table 71 Stage II: Time Horizon

Time Horizon	ARCH	ENG	QS	Total
Adhoc/as often as required	SA1, SA2, MA1	LE4	SQ1, SQ2, SQ3, SQ4, SQ5	9
Annual	SA3, SA5, MA2, LA1	LE2, LE6, LE3	LQ1	8
Less than a year	LA2	LE1, LE5, ME1, ME2	MQ1, MQ2	7
More than a year	SA4	SE1	SQ5	3

A key finding in stage II is that only large and medium-sized firms adopt a planning cycle of less than a year. A similar pattern is noted for firms that have an annual planning horizon, save a few small architectural practices. The reason why large and medium firms primarily have annual or less than a year (quarterly, bi-monthly) planning cycles may be due to the requirement for firms such as this to have annual general meetings or planning meetings with the leadership team/major shareholders and as required by law. In addition to this, only a small number of firms plan on a multiannual basis, i.e. more than a year, and these are small-sized firms only. The reason why large and medium sized businesses do not have a planning horizon greater than one year has been outlined above or may be linked to several factors/dimensions that are internal or external to the company.

These dimensions are explored in detail in the next section.

8.3.6 Strategic Decision Making Dimensions

Strategic decision-making dimensions (ref. section 3.5.5) were classified under three

categories as follows:

- **Internal dimensions:** related to strategic factors that emanate from within the firm
- **Evaluation dimensions:** related to factors used in strategy evaluation
- **External dimensions:** related to strategic factors external to the firm

In their accounts of the events surrounding strategic decision-making and the dimensions influencing it, these three themes were used to ensure comparability with Stage I.

8.3.6.1 Internal Dimension

Three key areas lie within the internal dimension category, namely: *resourcing, strategic and performance factors*. Figures 24-26 provide information from interview respondents pertaining to these themes, with different subthemes generated across all three. The rationale for grouping the data in this way are twofold. First, the data gathered under strategic decision-making dimensions was considerable and required further depth of analysis into succinct nodes. Secondly, data is not separated into different professions due to recurring themes across the three professions. Rather the data is distilled into the Figures 24-26, using the three main themes (resourcing issues, strategic issues and performance related issues) and accompanying subthemes as a grouping mechanism.

In the analysis of the internal dimensions, repeat business emerged as the most frequently cited internal dimension (19 nodes, 26 references). This confirms the findings from Stage I, that gaining repeat business is the most critical internal dimension considered within construction PSFs. This means that repeat business can potentially serve as an alternative metrics to financial performance for monitoring competitiveness, although this correlation is not future explored as it lies outside the scope of the current research. The condensed data from the internal dimensions nodes have been coded into Figures 24-26,

and a full list of codes for the internal dimensions is available in Appendix I.

In Figure 24, the resourcing theme is broken down into five subthemes, namely: resource allocation, sparking innovation, strategy tools, challenges to strategising and flow. In terms of resource allocation, this is usually done depending on the type of client. If the client is a high value client, the resources are allocated to focus on that client:

“At some stages we need to be careful and shall we say, close down the channels, to make sure that our resources don't become too stretched. As it happens, we're in one of those periods at the moment because we have had very large demands from some of our bigger clients that we have to meet so right now we sort of choked off looking for other work. That would be something that would be constantly monitored as we see the pressure on projects ebbing and flowing.”-

LAI

Apart from prioritising resource allocation based on client type, resources are typically allocated on a project basis as opposed to strategic:

“The [weekly] meetings are more kind of, what is ahead of us this week. Resources are allocated based on what are our staff going to be working on. What is coming up that's important, that kind of thing. Who's going to do what.”-SEI

The quote above further emphasises the heavily resource based view of strategising in construction PSFs, particularly the importance of human resource to PSFs. One of the key challenges to resourcing identified in the study and shown in Figure 24 is *fee pressure and increased employee mobility*. As the shortage in the construction sector in Ireland persists, talent mobility has increased, making it harder for human resourcing. The low

fee potential on individual projects also means lesser amounts are available for staff remuneration.

In Figure 25, a key finding is that the structure of participation in decision-making is usually top down, confirming the findings of Murphy (2011).

“We have five owners, but we have twelve directors. They’re involved in the decision making. And only senior people are consulted in the decision making as well.”-LE1

In CPSFs, where the power distance is low and professionals are empowered to take critical decisions based on their individual expertise, it is surprising to find that strategic decision-making is still centralised in a top-down manner.

Another respondent had this to say about the flow of decision-making:

“Senior management [participate]. In fact, it then gets conveyed to the rest of the team over a period of time.”- LA1

Centralised decision-making appears to be the norm within large firms, while in SMEs, the flow of decision-making seems to be more decentralised and equal sense of ownership exists among staff as long as it is in the best interest of the client. An example is given below:

“But I mean I would take a view, well I’m 66 now, but there, you know, there could be somebody out there who is 28 who is a qualified architect, he’s as qualified as I am. I might have, I might be older and I might have experience but it doesn’t mean that they’re not a good designer, so you have to give them the opportunity to bring that. And I believe it’s the role of the older people, more experienced people to ensure that the best skills, design skills within the people in the company are brought to the benefit of your client.”- MA2

Figure 24 captures a synopsis of the resourcing related themes.

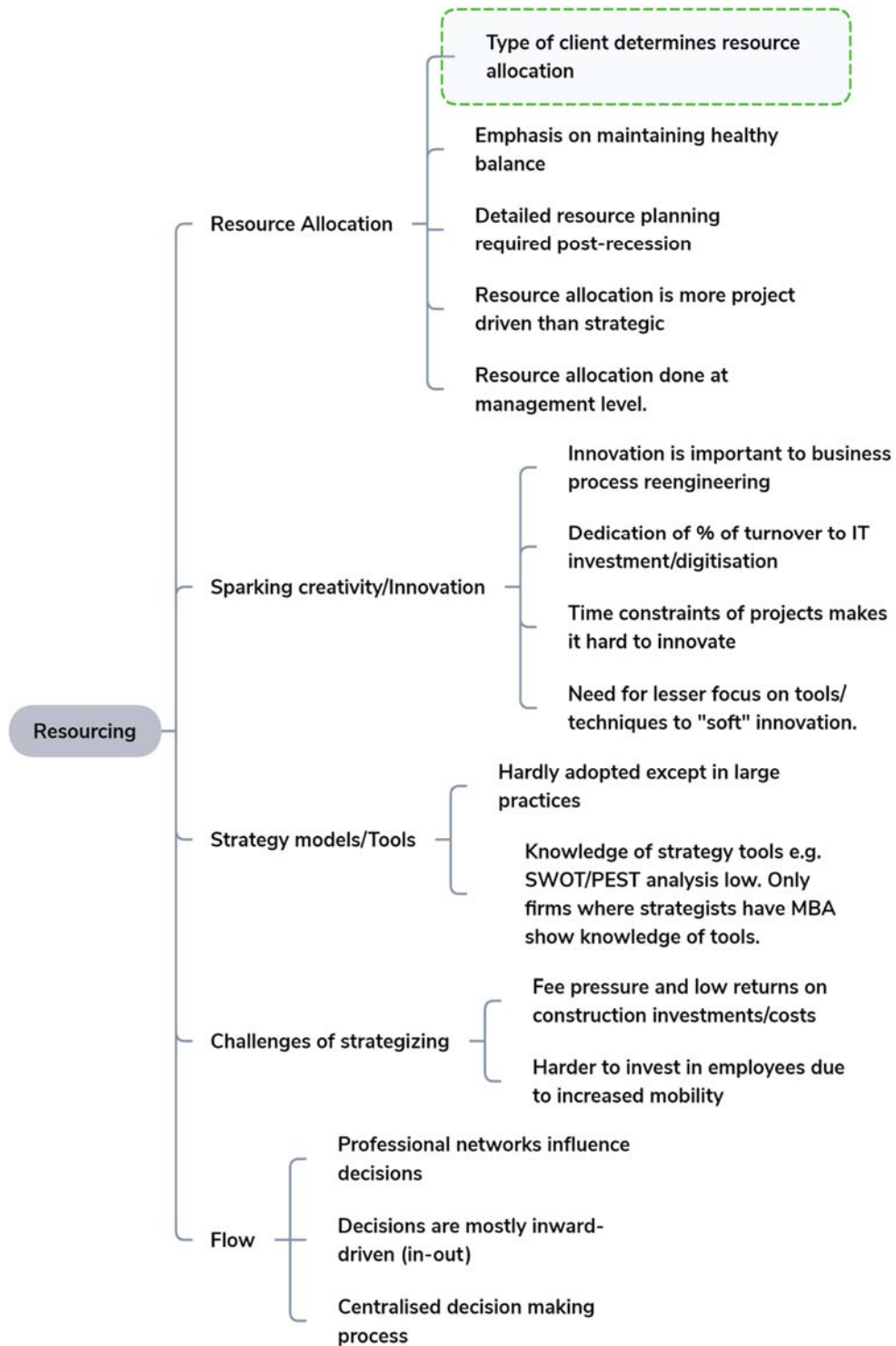


Figure 24 Resourcing

“Well what happens, the hierarchy within the organisation is three partners and we have three associate directors. And then we have a series of staff at various levels”.- ME1

The quote above further reinforces the multi-level nature of participation in decision-making across PSFs. While this is not the main objective of the study, it warrants further investigation in future studies.

In Figure 26, one issue that stands out is the performance related metrics that are used by firms instead of financial. Some of these alternative metrics include quality, staff headcount, and timesheets logging. Another key metric is client satisfaction, and one of the respondents had this to say:

“I suppose the characteristic of the company is we prioritise our client, we consider ourselves a professional firm which means our clients interests are our priority. And from that point of view, we have a fairly low profile because we are not into self-promotion or looking for fame and that sort of thing so we do our work as professionally as we can for our client.”-MA2

Apart from client satisfaction, another performance metric engaged by firms are research and development activities/competitions. Firms engage in research competitions and funding applications such as the Irish Research Council (IRC) and Science Foundation Ireland, in order to boost their research profile. Some of the PSFs now hire full-time researchers, as this contributes to an alternative performance metric. Future studies in strategic decision-making should explore the alternative metrics stated in Figure 26 in more detail.

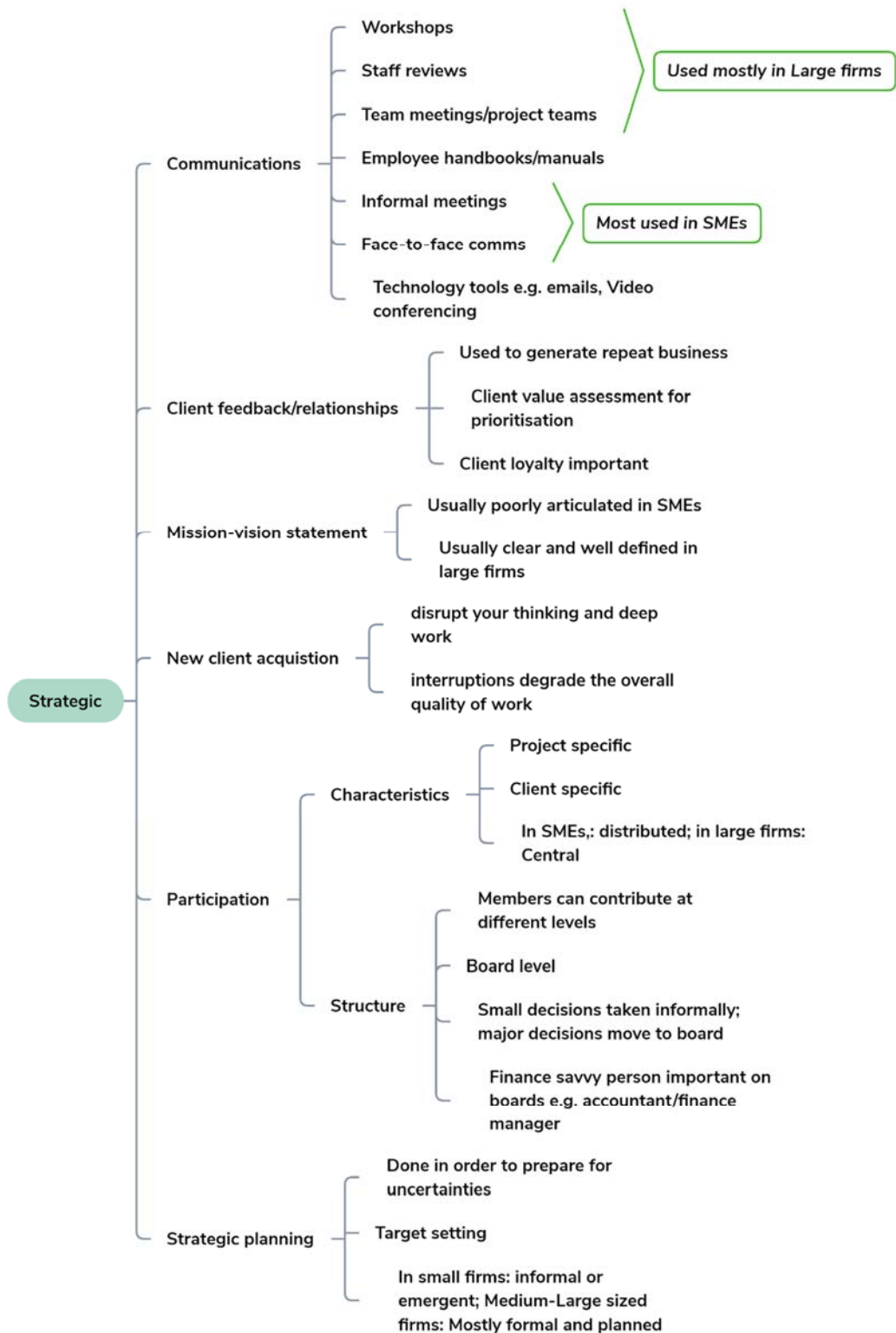


Figure 25 Strategic themes

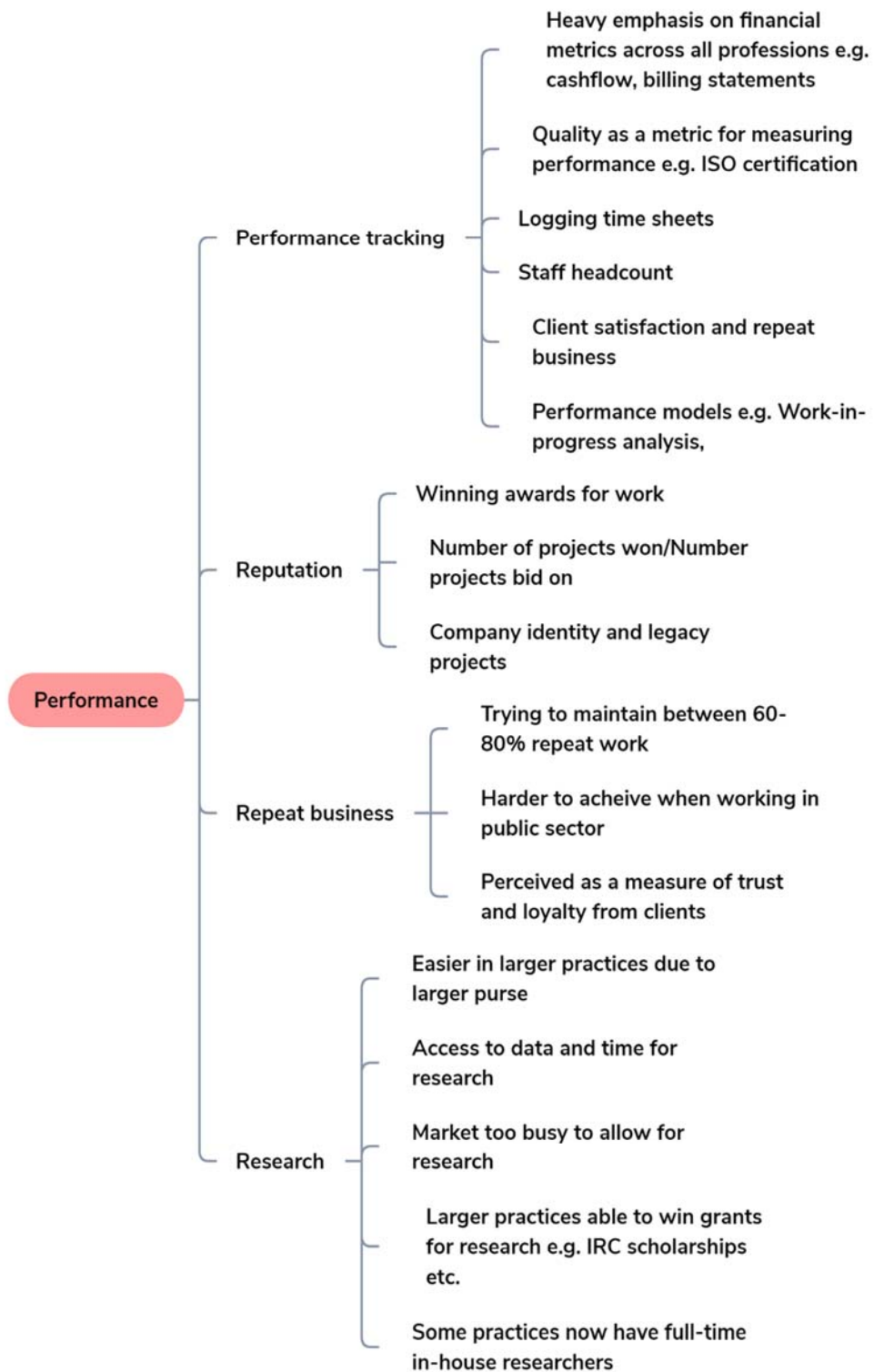


Figure 26 Performance themes

8.3.6.2 Evaluation Factors

Fee potential: This sub-theme was substituted for “clear numerical targets” that was analysed in Stage I, as it has been noted in previous research that firms may shy away from answering questions related to finances as an evaluation metric (Murphy, 2011; Tansey, 2018). However, in the qualitative stage where the interviews were much more personalised, respondents spoke more freely in this regard, which adds considerable insight.

Fee potential as an evaluation dimension recurred frequently in discussions with respondents regarding their decision-making process. A common view amongst interviewees was that now that the industry is in a sustained growth phase, attention must be paid to curb wage inflation to guard against difficulties that may arise in the event of a slowdown. One respondent noted that:

“There’s the constant problem that architects have of, as work gets very busy, pressure for wages goes way up. So that’s a game as well; as an architect, if you paid staff too much, then when the problems arise you’re in bother. But during the course of the busy time, it’s not so obvious that you have to be careful about how to pay.”- MA1

Likewise, another respondent from the engineering profession also warned that “*.fee potential is increasing again*” (LA2), but not yet at the Celtic Tiger levels, where there were fee rates. On the other hand, in a counter-argument, another large engineering practice operating in the same market opined that fee rates (the amount they are able to charge the client) were a thing of concern as a number of projects were being completed at cost, i.e. with limited profits. This may further compound the ability to attract and retain

a talented workforce, which in light of previous findings pertaining to labour shortages, may present a considerable issue going forward.

In their accounts of the events surrounding fee potential/numerical factors in evaluation of strategic decision-making, one interviewee said:

“There’s two things in the market, I’d say the market is probably – we were probably doing a lot of projects at cost. Sometimes we lost money, sometimes you make a bit of money but very, very at cost nearly zero profit and that’s not sustainable but recently the margin has moved towards something that might be acceptable, might be, it won’t generate enough profit to sustain the industry, we still haven’t enough profit to invest as heavily as I would like in IT and to attract – I’m going to use the term, ‘Clever people’, into the industry.”- LE4

The comment above is interesting as it points to two key issues raised earlier in the analysis. First, firms need to be able to generate enough fees on projects in order to be able to properly remunerate staff in wages. Being able to charge reasonable fees equals sufficient resources to hire talent, bringing again the criticality of human capital to the fore within construction PSFs. Secondly, due to high competition for talent in short supply, firms who do not necessarily select cost-leadership as a strategic choice, may end up accepting low-fees from clients just to win work or retain talent.

Another interviewee (engineering firm) argued that since fee rates are set by the industry, they were heavily reliant on who leads the project (e.g. Architects). This respondent believed that if fee levels continued the way they are, it would be unsustainable and they may have to begin rejecting work.

A final observation within this category arose in relation to firm location, in that a suggestion was made that firms outside of Dublin face lower operational costs, thereby may be better positioned to lower fees. While this point was raised during the course of the interviews, the geographic divergence was not the focus of the current research, but does however present an opportunity for further study.

Strategic human resourcing (SHR): Murphy (2018), Ó Murchadha & Murphy (2018), and more recently, McAuley & Hore (2019) have highlighted the challenges in strategic human resourcing within the Irish construction sector, however, no study has explored the topic empirically. Strategic human resourcing is listed here as an external factor since the company has no direct control over the supply side of talent.

In the course of the study, the respondents in the sample echoed similar sentiments about the acute shortage of skills in the industry and the challenges of sourcing talent locally. The severity of the shortage is so much that some firms have resorted to looking abroad for talent. The extract below outlines some of the comment from an interviewee:

“We are primarily looking for people in the UK at this stage because I think the only other people available are being churned around the market. We would take quite vigorous steps to protect our staff and make sure that we remain competitive in terms of salary and way of life and all of that...I tend to measure our economic success by our headcount...” – LA1

This view provides a number of important insights. First, the critical role of people in the competitiveness of firms is reemphasised in line with existing evidence pertaining to PSFs. Secondly is the fact that headcount/staff numbers may provide an important metric for measuring performance. Other challenges related SHR are discussed in Table 72, and the data in the table was compiled based on recurrent themes related to HR.

Table 72 NVivo Code strategic Human Resourcing

Strategic HR Issue	Further comments
Recruitment issues	<ul style="list-style-type: none"> - Massive staff turnover. - Firms under pressure to impress the staff. - Firms developing alternative metrics to financial remuneration, e.g. employee assistance programs, office environment, social evenings. - Talent who come across the border (threat of Brexit). - Problems with recruiting entry-level and graduate talent. - Too much outsourcing, making employees feel less empowered.
Legislative issues	<ul style="list-style-type: none"> - Challenges of securing permits for foreign talent
Skills issue	<ul style="list-style-type: none"> - Irish graduates are less skilled than UK graduates (ARCH) - Difficulty in recruiting graduates with 3-5 years' experience. - Insufficient interaction between industry and educational institutions (for cross-fertilisation of knowledge). - Emotional intelligence and writing skills are lacking among graduates. - Poor maths teaching in secondary schools.
Mobility	<ul style="list-style-type: none"> - Senior personnel are reluctant to move to rural areas. Preference for Dublin region for work.
Other issues	<ul style="list-style-type: none"> - Massive student debt, making students more conscious of salary than opportunities for growth. - Threat of influx of new talent from abroad and due to Brexit. - Students are not gaining entry into professional construction courses, e.g. engineering, QS and architecture. - Construction is less attractive than IT and Finance; thus these professions are winning over construction graduates. - Costs of accommodation for new talent. - Cost of introducing perks such as crèches and childcare, parking facilities. - Graduates not willing to commit to the Irish Market.
Motivational factors	<ul style="list-style-type: none"> - Less discrepancy in shareholding - Flat leadership structure (i.e. deemphasising hierarchical structures). - Defined career development plan e.g. graduate development programs. - Encouraging diversity. - Training employees to become specialists. - Getting employees ready for industry 4.0 (Artificial intelligence). - Building trust among employees. - Collaboration with the professional body to encourage young people into construction courses. - Mentoring programs for young professionals. - Increasing employee engagement and communications (via newsletters, emails etc.)

In Table 72, six critical areas were identified as being key to strategic human resources issues in construction PSFs via thematic analysis. These themes are *recruitment issues*, *legislative issues*, *skills issue*, *mobility issues*, *motivation related issues* and *other issues*. A number of these issues are enumerated here.

1. **Brexit as a threat:** some firms outline Brexit as a threat to human resourcing. The threatened by firms from the UK, who might have workers who cross the border daily or weekly may be affected when the UK finally leaves the EU. This will further compound labour shortage in the workforce in Ireland. The Brexit challenge is two-pronged, with some firms seeing it as a problem, while others see it as an opportunity for increased competition.

2. **Problem of getting skilled graduates from Ireland:** One of the large architectural firms pointed out the problems of getting graduates with sufficient skills in Ireland, thus the firm has to look to the UK for hiring. This may be due to shortage being experienced across most of the professions within the country (EU skills Panorama, 2019). This also links in with the comment that students are not gaining entry into construction courses, a problem already highlighted by Murphy (2018) in a skills report commissioned by the SCSi. Another area where Irish graduates are lacking is in critical thinking and emotional intelligence, pointing to opportunities for exploring strategic construction education in future studies.

3. **Motivation factors:** the data shows that the future of work needs to be more leadership oriented, encouraging diversity, collaboration and inclusiveness for employees as shown in the EU skills Panorama 2019 (Skillspanorama.cedefop.europa.eu, 2019). For firms to attract the best talent, work environments have to be perceived as conducive and

empowering to employees in order for talent to stay in construction.

Professionalism-professional associations: This sub-theme explores the interplay between professionalism, professional bodies and the strategic decision-making process. The three professional bodies were investigated and analysed together. The analysis in this section is not divided across professions due to similar themes that emerged from the study and due to the possibility of identifying the professional body based on information written about them, which may potentially breach confidentiality requirements.

Perceptions of the professional body is varied, ranging from positive to neutral, then negative. The data is presented in Figure 27.

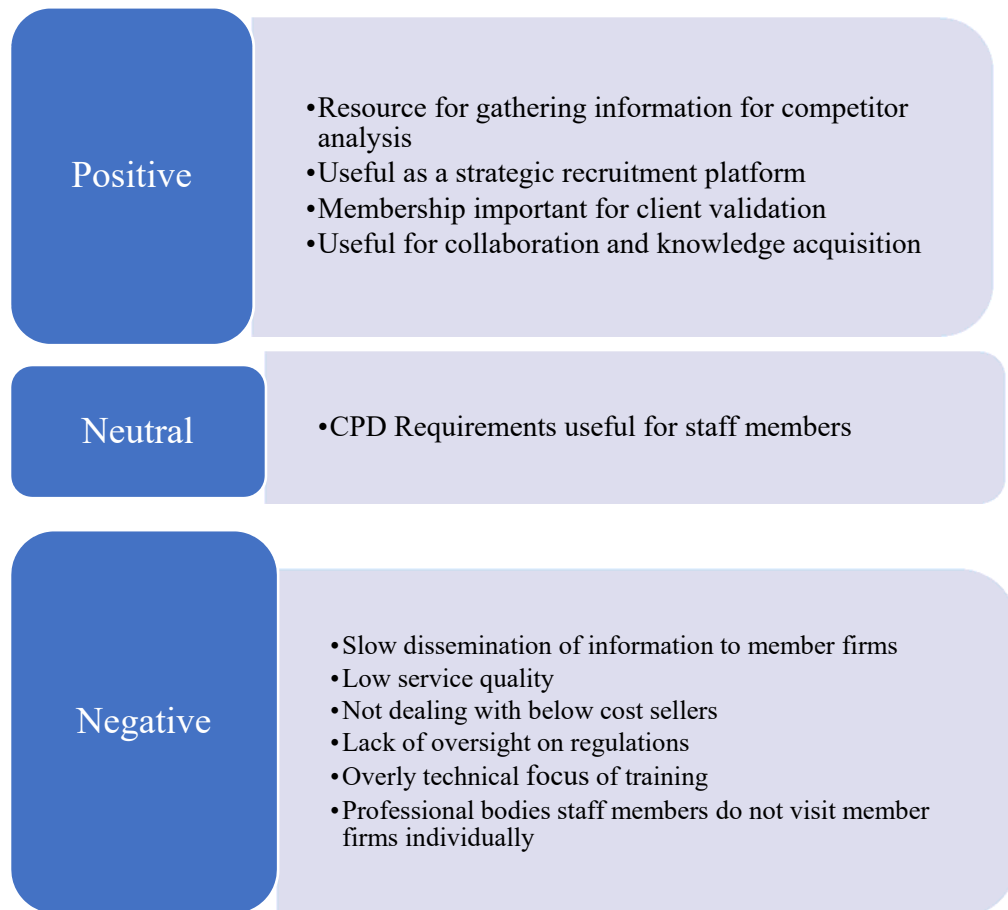


Figure 27 Perception of professional associations/bodies

Most of the comments related to professionalism were from architects, as they view their profession as highly important and of high esteem. One individual stated that

“...so they [architects] very much see the work that they do as their work and integral. My view of the world is that we are providing a service. Just like a surgeon who has to bring in specialists on a patient with a particular problem, that is precisely what we do because we are there to deliver on the specific needs of clients. Yes, and our view is that as a service to society we have to not necessarily let our ego get in the way of that.” – LA1

Some respondents raised some concern about other professions encroaching upon the perceived exclusive nature of individual professions.

“It [professionalism] does still affect because the customer is very wary of the architect. It has, and I think there’s a growing, I think what has happened is there are a lot of people who are not qualified architects operating in this space. And that is a threat to the architect whether they want to hear that and acknowledge it or not, it is a threat.”-SA4

Some firms shared this view across the three professions, with some identifying that the professional body has a huge role to play in regulating who can be called an architect, engineer or QS. Given the rigour and timeline it has taken to qualify and keep up with CPD requirements, some professionals are sceptical about allowing non-trained personnel in the field to use their title.

“Since I qualified I have done 17 sets of exams or things requiring qualifications.”- SA2

The role professional bodies in the strategic decision-making process is also considered within CPSFs, the data for which is presented in Table 73.

Table 73 Professionalism and Professional Associations

Professional associations	Regulation & Membership	Needs to be more hands-on
		Need to listen more to member firms
		Non-AES partners should have a path for membership
		Membership driven by client requirements
	Training	Need to focus less on technical training
	Communication	Sub-par quality of market information to member firms
		More commercial focused communications as opposed to technical information
		More hands-on approach to student recruitment into construction professions.
		Seeing focus on GP/Contractor firms as opposed to PSFs.

Professionals are required to register with professional bodies and as part of this membership are required to undertake their continuous professional development (CPD), and this process has its own effect on decision-making in these firms. Table 73 outlines the three key areas of thought around professional associations. Evidence from Figure 27 points to a somewhat negative sentiment of professional bodies by respondent firms, these three core duties of the professional body as understood by the firms are critical for the associations in optimising their services and configuring them to meet the strategic requirements of their members. Scope now exists for future analysis of the negative sentiments around firm relationships with professional bodies and further linkages between professionalism and strategic decision-making.

Government Policies: Government policies have a significant effect on the strategy

process of CPSFs. These policies may either restrict or catalyse the strategy process in construction firms. Figure 28 presents the results of the analysis of this subtheme in more detail.

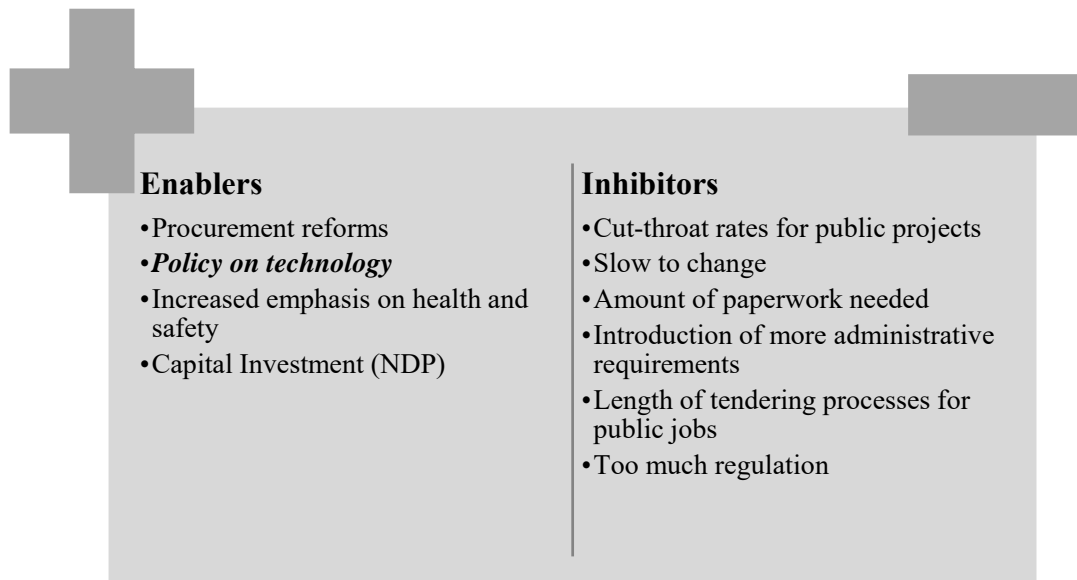


Figure 28 Enabling and inhibiting policies of Government

From Figure 28, government policies are split into enabling and restrictive policies. Most notable was the frequently cited technological policies of the government, which is considered as an enabler (specifically BIM technologies). On the restrictive policies on government, the most frequently mentioned is the huge amount of administrative requirements and paperwork required for tendering on government work.

Examples of the comments on restrictive policies/barriers to strategising posed by government policies include procedural issues:

“And then the other thing that has changed enormously is the administrative load, the amount of paperwork, the amount of certification. The attitude of the clients, particularly local authorities, towards having every little piece of paper in their file, ticked off. Having to produce that and keeping a paper trail of who sent what

and AF1 forms and so on...” – SA5

The extent of paperwork that is required:

“Yeah, it’s too much paperwork involved for all sides, from consultants and the contractor’s side. And even contractors there’s all these schemes going on, one of the schemes at the moment had to go onto e-tenders three times, worth about a million euro, and even guys, say small to mid-tier levels, they weren’t interested. Too much paperwork”- SQ5

This has serious implications for practice, since the respondents view government policies as mainly inhibiting as opposed to enabling. If the current government policies are perceived as restrictive, then it will pose greater implications for PSFs in strategic decision-making and for the wider business environment as it affects the number of tenders submitted and might discourage firms from applying to government projects.

The next subtheme, which deals with the broader context of factors that are external to the firm but influence the strategic decision-making process, is considered.

8.3.6.3 External factors

This subtheme examines two core areas: *competitor analysis and industry/macroeconomic analysis*, particularly the comprehensiveness of their analysis of same. This is to maintain consistency with the themes investigated in Stage I.

Competitor analysis

In this section, the type of competitor analysis carried out within member firms is elucidated. Three different categories are outlined: *active competitor analysis, passive competitor analysis and no competitor analysis*. Figure 29 expounds the analysis from the analytical memo appended to the competitor analysis node. The findings confirm that

most participant firms conduct ‘passive competitor analysis’ while only few conduct competitor analysis actively.

Active	Passive	No competitor analysis
<ul style="list-style-type: none"> • Monitoring competitors/clients • Via information from professional bodies • Assess top 10-20 industry leaders • Project-by-project competitor analysis • Feedback from competitive bidding • Keeping tabs on fee levels, rates per hour of competitors • Via third-party firms 	<ul style="list-style-type: none"> • Passive/cursory analysis • Informal • Marking own company against competitors on bids. • Studying government frameworks. • Via prequalification shortlists. • Implicit analysis. • Awareness of the market. • Surfing competitor websites for information. • Irish market too small to be analysed. • Cultural issues 	<ul style="list-style-type: none"> • Competitor analysis considered 'immoral'. • Due to unwritten code of 'non-competition' especially within SME's. • Dearth of reliable market/competitor data. • Lack of skillset required to conduct the analysis • Cost of the analysis. • Uniqueness of service offering [hard to compete with] • Repeat client base only [no need for competitor analysis] • Marginal return on investment for competitive analysis. • Competitors viewed as colleagues

Figure 29 Stage II: Competitor analysis node explanation

The findings presented in Figure 29 was compiled based on the count of responses related to each theme, i.e. active competitor analysis (7 firms), passive competitor analysis (10 firms) and No competitor analysis (9 firms). The findings agrees with the findings of Murphy (2011) about PSFs undertaking “cursory” competitive analysis, but evidence now shows that this extends to architectural and engineering firms.

One of the data coded into the competitor analysis category include the following:

“Yes, we would always be watching our competitors very closely.” – LA1

“We do. We look at our competitors; we see what they're working on. We gain information in terms of fee levels, numbers and usually at our MAD days, we have our Management Away Days, we have an update on that assessment.” - MQ2

The quotes above outline that firms who engage in competitor analysis, do so with a hands-on and deliberate approach, especially in light of increasingly fierce competitiveness in the construction industry in Ireland. For passive competitive analysers, one of the main ways by which competitors are analysed is via feedback from competitive tendering processes. Firms who do this analyse tender returns, and look at for example, the last ten school projects and identify which company is winning the most of these projects and benchmark themselves against them.

For firms who do not conduct any form of competitor analysis, one interesting finding is that communication between competitors occurs on an informal basis.

“The civil and structural industry is a very small industry, and we all know each other. And to be honest with you, our competitors are actually... most of them are our friends, you’d be surprised how often we engage with them and they engage with us on projects we’ve worked on that they’re working. So it is a bit like that, the industry, in the small scale thing.” - SEI

Sherman, Rowley and Armandi (2007) outline that competitor analysis is critical to the strategy formulation process, as it assists the firm in understanding its strengths and weaknesses, taking into account the firm’s fundamental traits and strategic personality. This is in order to be able to make appropriate adjustments to the firm and/or its competitive personality and obtain a good feel for the firm’s competitive market position. Based on the current analysis, it appears firms do not tend to fully nor formally engage in competitive analysis within CPSF’s.

Industry/Macroeconomic analysis

Another key aspect of external factors in decision-making as outlined in Stage I, is the industry/macroeconomic analysis. This question was posed to respondents in order to

ascertain whether/how firms operating in the industry conduct industry analysis. The data obtained is presented in Table 74.

Table 74 Industry analysis node (NVivo Export)

	Type of analysis	How/Why industry analysis is/is not conducted
Industry analysis	Passive	<ul style="list-style-type: none"> • Via reading industry/Commercial reports • Self-information • Keeping a low risk profile • Via publications from the professional body • Via other professionals/local networks • Local authorities/County councils • Procurement frameworks • EU documents • Size of industry as a constraint • Via charges per hour/product pricing
	Active	<ul style="list-style-type: none"> • PEST Analysis/Models • Government strategy documents (e.g. Ireland 2040)/Capital plans • Industry trends analysis/Tender reports • Market research companies • Monitoring tender documents and reports • Business plans, In-house annual market reviews and publications. • National planning framework/development plan

As Table 74 shows, there is a significant difference between firms who actively conduct industry analysis and those who do not. There are more firms conducting passive industry analysis than those conducting active analysis. Some of the firms conduct passive industry analysis via tender feedback from procurement processes:

“We’re in a closed market. The procurement for 80% of our work....comes through EU procurement driven procurement. So we would know the five people who prequalify for each job we bid for and we would know the price that each of those put in and we would know where we came in terms of quality because we

get feedback. So the market is known to us.” – LE4

Another way by which firms engage in passive industry analysis is through the professional bodies, and some participants expressed their views about this below:

“I am far too small but I am very, very active in the RIAI. I would read all the stuff and things would come up at me, so I would be very aware of things but I don’t do any analysis”.- SA2

“No [analysis conducted], other than reading what the ACEI shares...”- ME1

The comments from respondents suggest that certain level of dependence on professional bodies for support in industrial analysis by firms who engage passively in the process.

All PSF’s are required to belong to professional associations/bodies, who disseminate research with membership firms, therefore, it is assumed that every PSF undertakes some analysis of same (through CPD for example), however some firms are more active in their industry analysis.

Respondents classified under “active industry analysis category” are those who engage purposefully and strategically in industry analysis. Some of the responses from these firms are outlined below:

“Yeah, we do. At our board meetings we have what we call a PEST analysis, so we just keep aware and I mean for example I would be very involved in say initiatives that come out of Ireland 2040. I would be bringing that back to fellow directors.” –LAI

“Yeah, well we do the annual review, we publish... so there’s a good bit of work goes into that, yeah.”- LQ1

A noticeable trend in the data analysed above is that SME firms mostly conduct passive industry analysis, while large firms tending towards analysis that is more active. This difference is a major contribution to knowledge as clearly firm size can be deemed as a moderating factor for whether or not a firm conducts an industry analysis. Another possible explanation for this may be due to the costs involved in conducting industry analysis, as SMEs may not be able to afford the costs of getting market research conducted or hiring an external consultant to mine data from the industry.

Having fully analysed the key strategic decision-making characteristics, it is evident that the findings from this stage supports that of Stage I. The main critical internal factor is the performance related theme (repeat business), based on the highest number of nodes referencing the theme (see Appendix I). Similarly, the most critical evaluation factor is related to setting numerical targets, particularly fee potential and strategic human resourcing/company headcount (cf. Appendix I). Lastly, competitor analysis is the most critical external factor.

The preceding analysis has provided tremendous insight as to the strategic decision making process in CPSF's and the stage has now been set to explore the strategic choices resulting from the process.

8.4 Strategic choice

The strategic decision making process is the process by which firms determine their overall goals, whether it is planned/emergent or formal/informal. Ultimately, firms are make choices between alternative courses of action for their firm. The data coded under this node centres on questions around the corporate and business level strategies pursued by respondents, and other choices that affect the strategic direction of the company. Two

main subthemes are explored namely: corporate and business strategic choice. An additional sub-theme, which is a sub-set of the corporate strategy i.e. growth strategy , is also presented in Table 75, with the table used throughout the analysis of corporate and business strategic choices.

Table 75 NVivo Code for "Strategic Choice" Export

Main theme	Sub-theme	LE 1	LE 2	LE 3	LE 4	LE 5	LE 6	ME 1	ME 2	SE 1	SA 1	SA 2	SA 3	SA 4	SA 5	MA 1	MA 2	LA 1	LA 2	SQ 1	SQ 2	SQ 3	SQ 4	SQ 5	MQ 1	MQ 2	LQ 1	LQ 2	
Corporate strategy																													
Combination																													
Consolidation											X	X		X		X	X			X	X	X	X	X					
Downsizing							X																						
Expansion		X	X	X	X	X		X	X	X			X		X			X	X							X	X	X	X
Business strategy																													
Low-cost																													
Differentiation		X			X	X		X	X	X		X	X					X	X			X	X	X	X				X
Focus											X				X	X				X	X						X	X	
Combination			X				X						X																
Stuck in the middle				X													X												
Growth strategy																													
Collaboration/Strategic partnerships		X	X	X	X	X	X	X			X	X				X		X	X			X	X					X	X
Internationalisation		X	X	X	X	X	X				X		X	X	X	X	X	X	X			X						X	X
Joint Venture		X	X	X	X	X	X	X		X			X			X	X		X	X		X	X		X	X	X	X	X
Mergers & Acquisition					X													X											

8.4.1 Corporate Strategy

As is evident from Table 75, many firms in the sample select the expansion strategic choice. Sixteen out of the twenty-seven firms interviewed are undergoing expansion, aligning with current market sentiments about the improving nature of the construction sector (CIF, 2019).

Examples of quotes from respondents undergoing expansion is outlined below:

“Interviewer: You are focusing on expansion as opposed to downsizing?”

ME2: Absolutely I'd like to grow a practice up to 100. That's my target.”

While some firms are concentrating on expansion in terms of head count, others are focused at looking for more work and bidding in different sectors:

“So in terms of [corporate strategy], are we looking for work? Yes....we are actively looking and bidding for work in different sectors.”- MQ2

Some of the firms in the study are undergoing expansion only in specific regions, particularly the Greater Dublin Area:

“It would be stronger in the Dublin region, yeah. That's just purely driven by the investment.”- LQ1

Other firms qualify their expansion, placing a cap on their expansion plans:

“..Our vision now is to expand the company to about eight or ten, we don't want to go too big, eight or ten is what we're hoping to expand to.”- SE1

From Table 75, SME architectural firms are predominantly consolidating, meaning that their organisations protect and strengthen their position in their current markets with

current service offerings (Johnson et al., 2008). These firms seek to maintain their market share in existing markets; however, this does not necessarily mean that they are stagnating. It may mean that they are keeping the existing portfolio of clients and business size, or reinforcing their market position within the growing construction sector. The same applies to all small sized QS firms.

When a predominant number of firms in an industry are expanding, Deng & Yang (2015) argues that it may be due to confidence based on internal capabilities and strengths or externally driven market pressure. The only outlier in the study is the comment on the possibility of downsizing is explained thus:

“Unfortunately, it’s month to month, week to week at the moment because it’s so uncertain out there. Projects that were meant to be all gung-ho in December still haven’t happened. It’s just a lot of malaise with stuff. So, it’s difficult at the moment and we have to consider that we might have to downsize in the next quarter or six months.” - LE6

In order to gain deeper insights into the data across professions, the data was categorised on the basis of firm size, profession and corporate level strategy, and trends are clearly demonstrate in Table 76.

Table 76 Stage II: Corporate Strategy

Corp. Strategy	ARCH	ENG	QS	Total
Consolidation	SA1, SA2, SA4, MA1,MA2	-	SQ1, SQ2, SQ3, SQ4,SQ5	10
Expansion	SA3, SA5, LA1, LA2	LE1, LE2, LE3, LE4, LE5, ME1, ME2, SE1	MQ1, MQ2, LQ1, LQ2	16
Downsizing	-	LE6	-	1
Combination	-	-	-	-

Looking at the data above, it is evident that expansion is the most predominant across all firms, professions and firm sizes. In addition, no large firm is consolidating, only SMEs are doing so. All the large firms bar one are undergoing expansion, and as Preece & Ibrahim (2016) aptly explained, expansion is one of the most critical corporate strategies that firms in construction can undertake. In addition, none of the firms selecting the combination strategy, implying that CPSFs in Ireland are quite clear on the corporate goals, and the overarching corporate strategy is expansion, which supports the findings in Stage I.

Similar to the process in Stage I, the choices of the firm in relation to how they seek to grow are also explored. Growth strategies have been explained as choices adopted by firms in order to increase the sales and profit of the firm (Cheah & Chew, 2005). These strategies are now analysed in detail below.

Strategic partnerships/Collaborations: This node was coded into three categories: *intra-professional collaboration*, *cross professional collaboration*, and *non-collaborators*. Exploring collaboration is critical as it is a key theme in the study, and the data on this theme is presented in Table 77. PSFs are required to work together on projects on a regular basis, and the data from Table 74 highlights that while large and medium sized firms are more prone to collaborations within and across profession, small practises are much less inclined to do so naturally. This might be because small firms do not see interdisciplinary teams as collaboration. For large firms who are involved in government framework contracts, collaboration is mandatory as they would require additional expertise on large projects. However, some practices see intra professional collaboration (between practices in same profession) as impossible to achieve.

Table 77 NVivo Code to "Collaborations"

Intra-professional collaboration	Cross professional collaboration	Non-collaborators
<p>"Yeah. We would have ongoing relationships with other architects over several projects"- LA1</p>	<p>"Ah yeah, you do lots of that [collaboration], yeah. That's a very natural collaboration; they've got a skill that you don't have, so you want it."- MA1</p>	<p>"Not generally, no. And we would find that they would come in the form of public tender or government projects."- SQ2</p>
<p>"We would tend to collaborate with people who may be bring a different skill set that we don't have, and we've also collaborated with people who also don't have our skill set, and it becomes an opportunity to win work together to the benefit of both practices."- LA2</p>	<p>"Yeah, yeah we work with, so I have started that process. So, we are using I think there was a fear to use sort of like the bigger ones because they found we were too small, whereas I have turned that on its head." – SA4</p>	<p>"The opportunity to do that isn't really there. I can't think of a scenario that I would be teaming up with an engineer or another construction professional to get a project. It might well be out there and I'm not aware of it but I haven't come across that."- SA3</p>
<p>"We have tried, it's actually not really a very natural thing, two architects to collaborate. Because, architecture is about coordination and about synthesis, not dispersal."-MA1</p>	<p>"Cross professional collaboration with architects"- LE5</p>	<p>"No, no we don't. I think it was more of a confidence thing when we set up the practice. So, the senior architect who was here would have worked in a very large organisation, a very big practice and he was there for a long time. And he was more of a design architect so he didn't really have a 360 view of the whole business." – SA4</p>
<p>"It's not going to happen you know and why does it need to happen, so collaboration doesn't happen between competitors unless they're very different and unless one has a set of skills that the other doesn't have and both benefit."-MQ2</p>	<p>"Oh, yeah, we would [do cross professional collaboration]. Yeah, we do a lot of project management as well. Where we would be the prime consultants..."- ME1</p>	<p>"As I mentioned it earlier - I am only considering it now for going for jobs. Only because the turnover requirements are set too high for the sole trader."- SQ1</p>
<p>"I can't think so, no. I mean, we're pretty independent. We could work with architects and we collaborate on projects, but not beyond that."- LE1</p>	<p>"...I suppose we would look for opportunities where we could team with, say management consultants particularly. So you might have some of the big four management consultants. So there might be a tender opportunity for something like that, which we might be able to contribute 10% to. But it's worth doing it, because it opens other doors as well, and if it's a big project, it still could be a sizeable contract for ourselves."- LQ1</p>	<p>"I have a couple of QS firms that, when I'm busy, I can call on, and vice versa. But for collaboration, other than if you like job specific assistance collaboration, we don't sit around a table and say "What are you guys doing in relation to..." – SQ3</p>
<p>"No, no. If it got that big I think I would walk from it." – SQ4</p>	<p>"Oh yeah, yeah. Yeah. [We collaborate with] engineers, yeah, mechanical services."- SQ4</p>	<p>"It's the way the government set up the tenders. Say for a new school, they put it out to a tender, but it's an architecture-led team, and then I'm essentially tendering 13 engineers and all of that. I would have started off doing QS..I would have started off doing like...offering a freelance service to some of the big QS guys, all over the place, if they needed a big job in and wanted me to do it generally not..." –SQ5</p>

In addition to the data in Table 77, another theme arose in relation to the perception that collaboration does not happen between two competitors. One respondent explained that:

“...so contractor, design team, project team and that’s my – that’s where I see collaboration where it has the opportunity to happen. It’s like asking HP and Dell to come together and design the next computer.”- MQ2

Similar sentiments emerged from other firms who feel that collaboration should be natural between different professions, but would not consider collaborating with a firm in the same profession, as they would be seen as competitors. Some hold these sentiments due to past, unpleasant experiences in collaboration:

“... we did that competition which turned out to be very unpleasant with the other architects.”- MA2

In addition to the collaboration sub-theme, three other categories were coded into the overall growth strategies node under strategic choice. First among the three is the internationalisation node, from which some of the following comments are drawn:

“Then we also have offices in Belgium and in Sweden. We have been having a concerted drive over the past 10 years to internationalise the firm because we want to build resilience, having experienced so many boom and busts in this industry here in Ireland which is very volatile and in particular of course the bust of 2008 which was very challenging.” -LAI

From the above comment, it can be seen that one of the main reasons for internationalisation is to build resilience against the cyclical patterns experienced in the Irish construction sector. Another reason why firms are looking to internationalise,

particularly beyond the UK is the uncertainties around Brexit:

“The other thing is we are very deliberate. We have no intention of doing any work in England that’s why we are moving into Northern Europe.” – LQ1

As firms are yet to be able to accurately predict the nature of Brexit, internationalising beyond the UK is presents a plausible alternative opportunity. Not all respondents indicate interest in internationalisation though, as some practices are happy to remain local. This is due to experiences during the recession or of working abroad.

“No, not at the moment. Our work is confined to Ireland. Well, we were going to establish a practice in Bahrain and we found it quite difficult, you know. I suppose the answer is that we weren’t big enough for Bahrain, I think.” –ME1

The difficulties faced in international markets, difference in rules and regulations and the plethora of opportunities in construction in Ireland amongst others make up some of the reasons for focus on the domestic market. Details of the other three growth strategies are outlined in Figure 30. In the figure, there is a clear distinction between details of responses regarding the other three growth strategies, in addition to the collaboration category previously explained. In terms of mergers and acquisitions (M & A), very few firms in the sample population have actually undergone mergers or acquisitions. While some firms see strong reasons why they may consider undergoing a merger/acquisition, some respondents do not agree with the idea in general, citing managerial commitment and strategic fit among other reasons for not considering M & A’s.

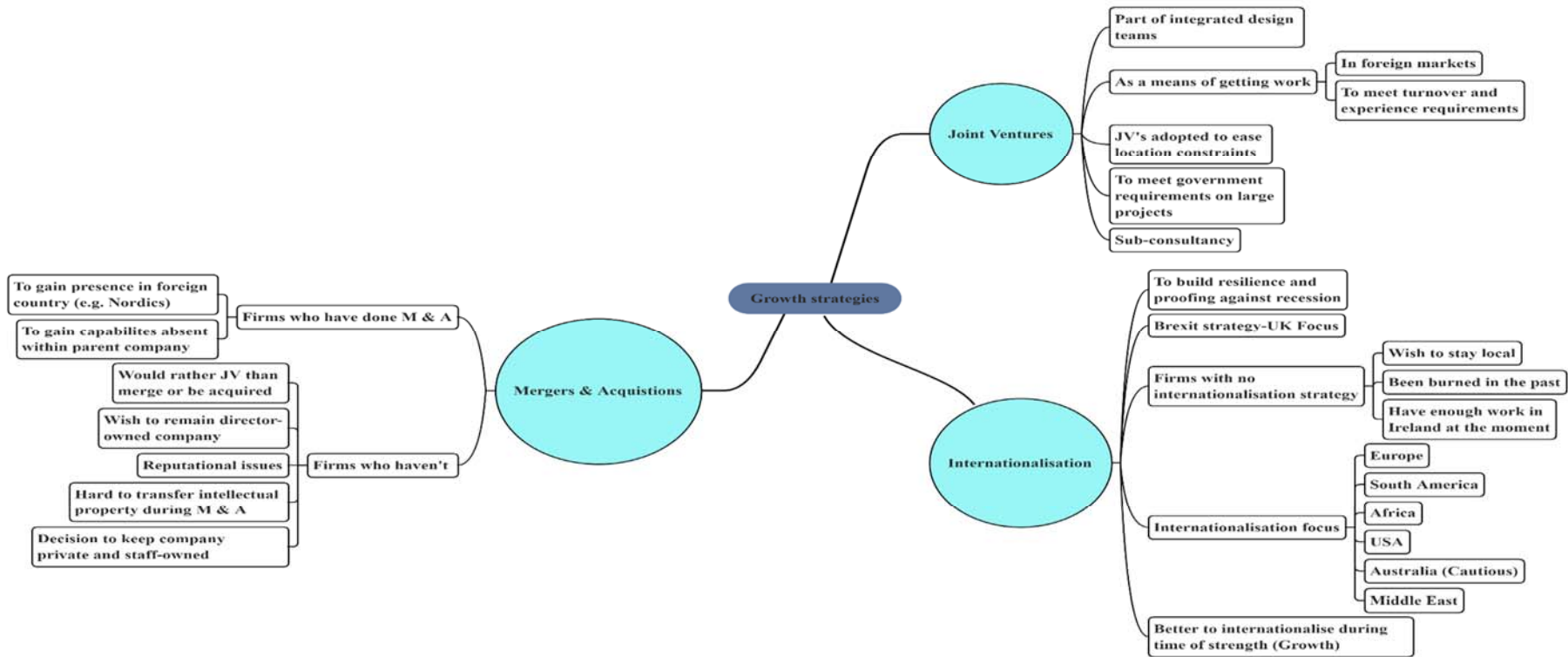


Figure 30 Growth strategies in construction PSFs (Stage II)

In strengthening the data presented in Figure 30, and to provide further evidence of quotes from respondents who adopt the M & A growth strategy, two comments are outlined below:

“No. The problem I think is that it’s a very personal business so we have a number of directors here who are let’s say committed to us...If you merge with another firm you’ll find that those people have the same commitment to their firm so sometimes that fit is very difficult.” - MA2

“No. No, we’ve been private since we started, and our vision would be that the good people who are working here for a long time will take over the business and keep going. We’d feel they deserve the opportunity after working here for maybe 20 years.” - LEI

Evidenced from these comments, is that size is not a determining factor for not growing based on mergers or acquisition strategies, except that large firms are more open to mergers, while SMEs favour acquisitions.

The last growth strategy to be considered in Figure 30 is the Joint Ventures (JV’s), with the reasons why firms select this option clearly stated. One of the key reasons from the study why firms select the JV choice is to meet the eligibility criteria set for large projects, especially when the company in question is lacking in either experience, manpower or turnover requirements. An example of a comment in this regard is outlines thus:

“We made a recent Joint Venture application with a larger firm because this firm has educational background and experience. The other firm has a lot more commercial office development experience. They have the turnover. I don’t have the turnover. So, the Government work, we’ve made a Joint Venture to apply for

educational work where I'm using their turnover and manpower to help qualify for a shortlist.”- SA3

Collaboration/strategic partnership is the most frequently selected growth strategy, while M & A's are the least frequently selected. This further supports the data obtained in Stage I. The primary reason for engaging in strategic partnerships/collaborations is in order to make up for deficits, which may be financial capacity or knowledge deficits. Furthermore, some government contracts require specific turnaround thresholds to be met, thus Joint Venture may be the favoured mechanism to obtain these thresholders, particularly for small practices.

The next section examines the mechanism adopted in realising corporate strategies, and how these firms position themselves relative to the business environment (i.e. business level strategy).

8.4.2 Business Level Strategy

Findings presented in Table 78 indicate that none of the firms in the sample are currently competing on a low-cost basis, although several of them agree to sometimes having to adopt low-cost on some projects, but it is not their intended or primary business strategy across the board. For example, one interviewee noted that:

Some of our projects are [low-cost]. We do flat fee a lot, so we got rid of percentage fee for a lot of our projects at a certain value and the client loves that....So, for us it means that we had, so it was like a Ryanair model, or the Aer Lingus model...So, we have different service level offerings, and basically that's how we differentiate it from [being low-cost]...” – SA4

Another interviewee, when asked about his or her business strategic choice said:

“[We] compete more on differentiation. Although differentiation occurs, but also [we] compete on price due to the industry, there has been downward pressure on fees. [We] do not present ourselves as low cost to clients, but in terms of conception; try to out-bid other firms in order to win work”. – **LE3**

From these comments, we can see that firms claim not to engage the low-cost option, but would sometimes do so due to fee pressure. Table 78 provides a clearer picture of the business strategic choices selected by the firms in the study across the three professions.

Table 78 Stage II: Business Strategy

Business Strategy	ARCH	ENG	QS	Total
Cost Leadership	-	-	-	-
Differentiation	SA2, SA3, LA1, LA2	LE1, LE4, LE5, ME1, ME2, SE1	SQ3, SQ4, SQ5, MQ1, LQ2	15
Focus	SA1, SA5, MA1	-	SQ1, SQ2, MQ2, LQ1	7
Combination	SA4	LE2, LE6	-	3
Stuck in the Middle	MA2	LE3	-	2

More than two-thirds of the sample size selected the differentiation option, and Oyewobi et al. (2014) outlines that when construction organisations adopt differentiation strategies, it is in a bid to ensure survival in complex business environments. These firms are thus seeking to cement their place in the industry in Ireland via differentiation strategy.

Notably, two of the respondents appear to be stuck-in-the-middle, which Johnson et al. (2008) argue is a recipe for failure, as such firms do not have a clearly defined business strategy, i.e. *neither cost-leadership, differentiators or focus*. A key finding in this study is those firms classified as adopting combination strategies and those who appear stuck-in-the-middle. While firms in the combination category can clearly delineate the specific

business options they would select at different points in time, those who are stuck in the middle are unclear about this.

The firms adopting combination strategies are those who are definite about which of the three generic strategies they currently select as their preferred business strategy, but in the firm *stuck-in-the-middle*, this is quite unclear. The reason why one of the firms was classified as being stuck-in-the-middle is not being able to define what their business strategy:

“No, we would tend to, I don’t think our fees would be any lower than standard fees but then the fee situation in the architectural profession is very, very strange because you do hear of even some of the bigger firms going in at percentage fees that we couldn’t do the work for. There’s, I think there’s a problem when you get to a certain size that you have to buy work to keep going”-MA2

The ‘stuck-in-the-middle’ firm as described by Michael Porter (1980) have no distinct strategy (as described from the quote above), but rather have an ‘average’ perceived price and ‘average’ perceived differentiation offering. Alternatively, these firms have a confusing array of offerings positioned in different ways that is difficult to decipher.

The findings within business level strategy shows marginal difference between professions and firm sizes, except that there are no small firms who are stuck-in-the-middle. This is expected, as small firms would be largely focused on survival, as they are mostly sole proprietorship or small partnerships, leaving them at the risk of small shocks if they do not have a defined choice in terms of their business strategy. The data from business strategic choice in the stage corresponds to that obtained in Stage I, agreeing with the body of knowledge that differentiation is the primary strategic choice for PSFs.

This finding was valid across all professions and firm sizes, meaning that size or type of profession has no effect on the business strategic choices selected by firms.

Bagnoli & Vedovato (2014) have established the link between effective knowledge management processes and a firm's strategy, and this is considered next in the light of qualitative data obtained.

8.5 Knowledge Acquisition

In the preceding chapter, three critical areas of knowledge acquisition were considered, namely people, process and technology. Knowledge acquisition has been established in section 8.3.5 to be critical to strategic human resourcing, comprehensiveness of the external environment and continuous professional development (CPD) in PSF's. The interplay between the people, process and technology metrics and strategic decision making are further explored in Table 79.

Table 79 Knowledge acquisition metrics

Knowledge acquisition metrics		
People	<i>Internal</i>	Support for education of employees
		Conference sponsorship/training support.
		Mentorship/payment for professional registration.
		Technological training support.
		Appointing knowledge champions.
		Allocating time on timesheets for learning & creativity.
	<i>External</i>	Professional bodies
		Government training programs e.g. Skillnet/Enterprise Ireland
Process	<i>Formal</i>	Appointing knowledge specialists.
		Continuous professional development (CPD)/Professional body/Chartership
		Online learning platforms e.g. LinkedIn learning/ In-house company library
		Training by external consultants/ Classroom style office sessions.
		Harvesting tacit knowledge via building knowledge pools/database
	<i>Emergent</i>	Self-structured learning
		Via informal knowledge exchanges.
		Emphasis on innovation and innovative thinking.
		Learning from projects/experiential learning
		Publishing
		Bonus system for new knowledge and innovative discoveries.

		Lunches/dinner knowledge exchanges
		Open plan office structure to enable cross fertilisation
Technology		Largely adopted to gain competitive advantage over competitors
		Cost implications is a great barrier
		BIM is changing the knowledge landscape, creating new opportunities.
		Technology drives knowledge acquisition but mostly used to keep up with competition.

The data presented in Table 79 shows a diverse number of issues related to the people, process and technology factors in knowledge acquisition. In the study, special attention was paid to the knowledge acquisition process in particular both the structure and incentivisation of knowledge within CPSFs. Key among these is that most of the knowledge acquisition is driven by the professional body, as reflected in some of the comments such as:

“Well look, I mean, the RIAI structure is that you have to undertake CPD. So yeah, we don’t... people take the time, they do their CPD. We’re very successful with staff training, where they do their professional exams.” - MAI

Another interviewee put it that:

“We do it [knowledge acquisition/CPD] for two reasons, one because it’s required by the professional body. And two, to grow our own people and make them better. Also, I don’t think you’ll keep good people the less you have the opportunity for them to learn and to grow and to grow and to grow.” - LE1

The quotes above explain that CPSFs primarily engage in knowledge acquisition due to professional body requirements. However, from the comment above (LE1), attending KA events with the professional body is also beneficial for internal learning and development. Table 79 also highlights that the knowledge acquisition process is largely informal and

emergent [based on the count] aligning with the findings from Stage I.

It can be concluded that the role of professional bodies in keeping professionals updated is critical as the PSF's are dependent upon it. The professional bodies will also be key to upskilling (cf. management and leadership training dearth observed in section 8.3.5), and is an enabler for achieving competitive advantage.

A question that lingers is “who is involved” and “what they will do” in driving all of these changes either related to knowledge acquisition or risk attitude. This question can be assigned via the strategy-as-practice lenses, which is now explored in the next section.

8.6 Strategy-As-Practice

This part of the study explores the decision-making process via strategy-as-practice (SAP) lenses i.e. practices, practitioners, and praxis.

8.6.1 Practices

There are three key practices in strategising identified by Whittington et al. (2006), namely: *strategy workshops, project management activities but with strategic and organisational intent, and the creation of symbolic artefacts to communicate strategy.*

The central focus in this section is to elucidate the practices of managers within CPSFs as they formulate strategy within their firms. Considering the first practices as described by Whittington et al. (2006), i.e. strategy workshops, it appears that managers within CPSFs strategise by enacting a set of practices, that are produced primarily during workshops. The workshops appear to be the most predominant practice where the work of strategy is done within PSFs [based on number of counts/references to it].

Other practice-related methods of strategising within construction PSFs identified in line with Whittington et al. (2006) categories are outlined in Table 80. Due to very little divergence in the practices mentioned across all three professions, they are grouped together and not separated across professions.

Table 80 Strategy practices in Irish Construction PSFs

Whittington et al. (2006) practices	Description from the study
Strategy workshops	Strategy meetings
	Offsite trainings
	Board meetings
	Resource allocation meetings
	Review meetings (Monthly, quarterly or annually)
Project management activities with strategic intent	Routinisation of decision-making on a project level
	Partnering and “seeking help” on demand
	Quality of decisions based on experience/impulse
	Ritualisation (making some practices into repetitive tasks)
Creation of symbolic artefacts	Dashboards
	Written plans
	Work/ Financial forecasts

The timing of the strategy workshops indicated in Table 80 differs across firms with some being weekly, fortnightly, monthly or annually (at Annual General Meetings). Bourque & Johnson (2008) outline that strategy workshops, meeting and away days are critical practices involved in decision-making in firms. These workshops involve several micro-practices that eventually affect overall strategy. Seidl and Guérard (2011) outlined that strategy meetings and workshops serve many different (both manifest and latent) functions, and one key effect that these have includes suspending the existing organisational structures and in this way provide a platform for strategic reflection. An example of such is the “*management away days*” held by some firms within the study,

with these events focused at making and reviewing strategy. However, deeper insights into the activities that take place at these events is limited, particularly given that the current study is predominantly process-focused as opposed to practice focused indicating considerable opportunities for future research.

In relation to activities that have strategic intent, some of them highlighted in Table 80 includes the *routinisation of decision-making on a project level, partnering, impulsive decision making based on experience and ritualisation.*

An example of ritualization on projects with strategic intent is described below:

“...[on] every project, the moment it comes in we have to have what we call a ‘Go, no-go meeting’. So, we assess the value of the client. Is it a Tier 1 client or a Tier 2 client? Value of the project, availability of our resources and the first thing we do before we spend a penny is assess are, we going to go for this or not. It is quite interesting actually, how many projects you do not go for.” - LA1

Practices can also be embedded in symbolic artefacts that are used to communicate strategy. An example is given, where the firm employs a one-page dashboard to communicate their strategy and review same regularly. The dashboard is highly symbolic and reflective of the practices within this organisation, helping it keep track of where it is and where it wants to be in terms of strategy. One interviewee explained how their firm leverages dashboards:

*“...so we have split the business into five cost centres. So typically, a director takes each cost centre, but one of them is shared between two, the fifth one. So within each of those we have a **one page dashboard**, just one A3 page on a monthly basis and if you read that dashboard it will show you where you sit.”-*

MQ2

Heracleous & Jacobs (2008) highlight that material artefacts, such as that adopted in the firm above, are purposefully employed in order to stimulate strategy. These symbolic artefacts are key in the communication, coordination, and control of strategy (Whittington et al., 2006).

Having explored these strategy practice-related themes within CPSFs, three key conclusions can be drawn from the analysis:

1. Strategy workshops/meetings are crucial to the formulation of strategy within CPSFs, and takes place at top and mid-level management e.g. board meetings, management meetings etc.
2. Some project management activities end up with strategic consequences, as they lead to routinisation/ritualisation of tasks, which can be strategic in the long-term.
3. A key example of strategy artefacts adopted within CSPFs is project dashboards and targets, which outline the strategic direction of the firm in project terms.

It is important to state that this study is only exploring the adaptability of SAP to strategic decision-making in construction PSFs, and SAP is not the main theme of the study. As a result, the analysis only explored the three key elements of SAP, without drilling down to see how factors like size, ownership structure, and firm age affect the practices in these firms. Thus, the current analysis is considered sufficient.

Next, the practitioners, i.e. “those who do the work of making, shaping and executing strategies” (Whittington, 2006 pp. 619) are explored.

8.6.2 Practitioners

Strategy practitioners are not only the senior executives for whom strategy is the core of

their work (Grant and Spender 1996), but also involves many others who perform strategy work as part of a wider role (Grant 2003; Mantere, 2005). These strategy practitioners play a crucial role in strategy formation. *Table 81* lists some of the practitioners within construction PSFs, and the work they do in strategic decision-making.

Table 81 Strategy practitioners in construction PSFs

Strategy practitioners	Work they do
Marketing Manager	Marketing functions that affect overall strategy.
Accounting manager	Control cost functions and eventually influence business strategic choice.
IT Manager	Influence technological investments and also help the firm differentiate itself via technological development.
ISO Manager (Quality manager)	Influence the quality function within the practice and eventually help the firm select its business strategy.
Executive managers (non-technical)	Make corporate strategic decisions that result in strategy formation e.g. hiring and firing.
Project managers	Project specific decision-making with strategic implications
Board of Directors	Setting long-term strategy e.g. 3-year plans, growth strategy
Middle Managers	Day to day management, KPI monitoring and monthly reports.
General staff members	In small firms, practitioners are predominantly all members of staff within the company.
External consultants	Brought in by management team to help formulate, implement and appraise company strategy.

The data in the table above highlights the diverse nature of strategy practitioners and the roles they play in strategic decision making in construction PSFs. The diversity in the practitioners' category within PSFs is similar to the postulation of earlier theorists that practitioners comprise actors that either may be working inside a firm or are external to it (Clark 2004). Some of the comments coded into Table 81 are presented below:

“So it’s [strategy] been prepared by the executive management team of the business. It’s been signed up with the shareholders of the business and it’s just

about to be communicated to all of the staff in the business.” – LQ2

*“It would be more on a director... the [strategic] decision making is on a **director, or a partner level**, but we would always consult our staff, they would have input into the process of decision making.” – SE1*

Aaltonen (2007) argued that instead of overtly focusing on the practitioners, managers or others ‘doing strategy’ or strategising, it is advisable to adopt the activity-based view on strategy (Johnson et al. 2003) seriously, via focusing on the activities which these actors adopt to bring strategy to life as highlighted in Table 81. A key finding in this study is the role that external strategy consultants play as practitioners in the strategy formulation process. Only four firms out of the 27 firms (15%) interviewed claim to have used the services of external consultants in strategising, and these firms are mainly large and medium firms. This again reiterates the resource constraints faced by small firms in strategising, as larger firms have the advantage of being able to hire managers with MBAs or otherwise recruit external consultants for strategic decision-making.

What activities do these practitioners engage in that is considered as “strategic”? How are these adopted in decision-making processes? These questions are answered in the next section and incorporated into a framework along with components of the process characteristics investigated in Stage I.

8.6.3 Praxis

Strategy “praxis” refers to actual activity, what people do in practice (Whittington, 2006). In this section, an overview of the activities involved in the strategising in CPSFs is highlighted, and emphasis on how the work of strategy is done i.e. praxis. This also involves exploration of strategy tools such as analytical tools (e.g. benchmarking and

SWOT-analysis), creative tools (e.g. brainstorming sessions) and networks (George, 2016).

In their accounts of the events surrounding praxis elements in strategic decision-making, some of the respondents had this to say:

“But on the case of one thing I am probably at pains to do on a project management basis, everything is documented. So we document like, we provide a higher level of contact in terms of meetings and particularly on residential work we have weekly site meetings, everything is minuted and despite the fact that being small like we treat them as much as like big projects.” – SA1

Another way in which this is demonstrated is communicated as:

“This company gathers that information face to face, then they're going to send a survey out to everybody again confidential which is more multiple choice, then they take that information and they feed that back to the management” - MQ2

Based on the comments above, there was a sense amongst interviewees that weekly site meetings, project documentation/minute keeping and surveys are the key strategy tools adopted in the selected PSFs. In firm LE6, praxis tools such as webinars, behavioural training, conference presentations, PR, regular newsfeeds etc. are also used in strategy formation.

“[strategy is enacted via] specific target areas in BIM, health and safety, CADS RC, behavioural training, webinars. So, then again, we're coming for... It's one of these integrated systems. You can take this. And then PR. Regular newsfeeds, conference presentations, and all that sort of stuff. Obviously, the financial model

and all of that and the timed system to be kept update by everybody and notes on everything. So, yeah, and we do review this every quarter just to see where we are. So, we have to be thinking ahead.” – LE6

Table 82 below was further curated from the responses from the interview, and points to a plethora of praxis tools adopted within CPSFS. These were distilled and triangulated into praxis themes as suggested by Wolf & Floyd (2013). They prescribed four key main themes within the strategy praxis domain, outlined in Table 82. Technology tools replace the “strategy workshop” element, as strategy workshops have already been treated under the practices theme.

Table 82 Strategy Praxis elements of Construction PSFs

Wolf & Floyd (2013) praxis themes	Praxis elements
Analytical tools	SWOT model, PEST, Financial models, employee surveys, employee engagement tools, video feedback systems
Creativity tools	Design workshops, brainstorming sessions, informal hangouts/meetings for staff, social evenings, creativity workshops, innovation vouchers for new discovery,
Planning models/frameworks	Internal strategic plans, Health and Safety plans, Quality plans
Technological tools	BIM, CAD, CostX, REVIT, Collaborative technologies, digitisation tools, Websites, digital marketing tools, going paperless,

The list in Table 82 is non-exhaustive, but based solely on the data obtained from the study in the qualitative stage regarding the tools adopted in strategising. The primary concern of strategy praxis is identifying specific material tools (e.g. analytical tools such as benchmarking, creativity workshops) produced and employed during the process of strategy formulation (Vaara et al. 2010; Wolf and Floyd 2013). While this analysis does

not differentiate the tools based on profession or size, it achieves the aim of identifying the defining strategy praxis dimensions in CPSFs, and contributes particularly via the introduction of creativity tools as a praxis element. This has hitherto not being identified in previous SAP studies in construction, as creative tools have not been considered as part of the tools needed for strategy formulation within construction PSFs.

Perhaps the most relevant observation within construction research is that there is only limited focus on praxis side of strategy making, within the much less investigated SAP stream of research. This is evidenced by the paucity of literature in strategy praxis within the body of knowledge in strategy in construction. Most studies have only addressed performance and process-centric focus, while ignoring a wide variety of analytical and creative instruments (e.g. creativity workshops, strategic off-sites, SWOT-analysis, strategy maps) used to define the praxis of strategy making within construction. These instruments although widely used, are not usually recognised as being part of the decision-making process. As essential as practitioners are to strategic decision-making, praxis tools are equally critical in the overall strategy process, most particularly technological tools, which have hitherto not, being studied within SAP body of knowledge in construction. Bryson (2010) reinforced this, emphasising that strategy tools perform a crucial role in generating consensus and a shared meaning between strategy practitioners, and there needs to be more insights into how praxis tools influence strategy formulation within construction beyond the current analysis.

An opportunity now exists to curate these tools, in addition to the practices and practitioners elements into a coherent strategy-making framework, that fosters consensus, shared understanding, commitment to strategy (George, 2016), as these can help these

firms achieve strategy success and subsequent organisational performance (Ackermann and Eden, 2011; Dewettinck & van Ameijde, 2011). A summary of Stage II of this research is now presented.

8.7 Comparative Analysis Across Stages I & II

The data obtained from Stage I & II have provided a comprehensive investigation of the strategic planning process, strategic choices and knowledge management strategies for three construction professions, namely Architecture, Consultant Engineering and Quantity Surveying.

A cross tabulation of the findings from the quantitative and qualitative stages is now presented, and the similarities and differences between the findings in the two stages identified for onward integration into a framework for strategic decision making in CPSFs. The comparative analysis is presented in Table 83 below:

Table 83 Comparative analysis chart

<i>Strategy element</i>	<i>Stage I (Quantitative)</i>	<i>Stage II (Qualitative)</i>	<i>Inference</i>
<i>Corporate strategy</i>	Expansion	Expansion	Expansion
<i>Business strategy</i>	Differentiation	Differentiation	Differentiation
<i>Strategic type</i>	Reactors	Prospectors	Dynamic (depending on size of practice)
<i>Knowledge acquisition process</i>	Contagion driven	Contagion driven (i.e. Emergent)	Validates Seriki & Murphy (2018) SC model
<i>Attitude to risk</i>	Managers	Managers	Managers

<i>Approach to strategy</i>	Emergent	Planned	Dynamic (depending on size of practice)
<i>Key decision making dimensions</i>			
<i>Internal</i>	Repeat business	Repeat business	Repeat business
<i>Evaluation</i>	Setting clear numerical (financial) targets	Setting clear numerical targets (SHR/fees)	Setting clear numerical targets (financial/HR)
<i>External</i>	Competitor analysis	Competitor analysis	Competitor analysis

The data in Table 83 also presents notable findings, predominantly similarities, with minor differences. The differences are specifically related to the *strategic type and approach to strategy*, which has previously been explained as caused by differentials in the sample population in the QUANT/QUAL stages [i.e. *based on the size differentials across both stages*]. There was a greater proportion of large firms in the qualitative stage than the quantitative, explaining the divergence in results obtained. Another possible explanation could be that in Stage I, the ratio architects to the other two professions was far higher than Stage II (**Stage I**= 116 ARCH: 43 ENG: 66 QS; **Stage II**: 9 ARCH : 9 ENG : 9 QS)

The table also shows that both stages of the study report similar findings in terms of corporate and business strategies, differences in the some of the characteristics, particularly strategic type and approach to strategy and possible explanations for the difference has been provided earlier in this chapter.

8.8 Summary

The findings in this stage (Stage II) of this study clearly demonstrates the characteristics of the strategic decision making process in C PSFs and the ultimate strategic choice

selected.

The SAP perspective has been used to frame the analysis with an exploration of the practitioners, practices and praxis components in construction PSFs.

Numerous findings have been derived across two stages of research, however, ten critical findings are highlighted as follows:

1. The business environment in Ireland, although growing and improving is still febrile and fraught with uncertainties. Skills, technology and hiring issues are the most critical issues that need addressing in the environment, which is a key influencing factor in strategic decision making within CPSF's.
2. Majority of the firms operating in the industry are SMEs, therefore challenging previous research focus on large firms. There is a disproportionate emphasis of strategy research on large firms, despite SMEs being the most predominant firm category in the sector further validating the findings from Stage I.
3. The approach of the firms in this stage of the study to strategy is planned. This deviates significantly from the findings in Stage I, which was mainly emergent.
4. Prospectors are the most frequently selected strategic type option within this stage of the study.
5. Managers and maximisers (Risk seeking cluster) take up a combined 52% of the responses, while Conservators and Pragmatists take up 48%, meaning that the CPSFs in the study are more risk seeking than risk averse, once again, concurring with the findings in Stage I.
6. The time horizon for reviewing strategies within CPSFs is primarily Adhoc or as often

as required.

7. Majority of participants in Stage II indicated that they are expanding, aligning with the trends in the economy and market about improvement in the construction industry (CIF, 2019). The preferred growth strategy adopted by firms is strategic partnerships/collaboration, further reinforcing the findings of Stage I. In addition, the differentiation strategy is the primary business strategic choice, with no firm competing on a low-cost basis. .

8. Repeat business is the most critical internal factor, while industry analysis ranked as the most critical external factor in strategic decision-making dimensions. Strategic human resourcing is the most frequently cited evaluation factor, as headcounts and difficulty to find talent is considered a critical pointer for the firms to evaluate the direction of the industry.

9. The knowledge acquisition process in CPSFs is mainly emergent and driven by the professional bodies.

10. Strategy-as-practice has been tested as a useful tool for exploring the strategy process in CPSFs, with the most frequently cited practice in strategic decision-making done via workshops. Practitioners of strategy are very diverse across the interview population, yet it is evident that majority of the practitioners are senior management team members. One notable finding is that strategy practitioners are spread out across all hierarchical levels of the construction PSFs.

The ten (10) conclusions drawn above summarise the findings from the second stage of the study, and these are triangulated with findings from stage I in the next chapter.

It is apparent from the data in Stage II, that most of the strategic decision-making characteristics investigated support the findings in Stage I, further showing the rigour in the analysis and revealing little differences in the findings across both stages.

The next chapter synthesises the data obtained from the study into a best practice framework for decision-making within construction PSFs. This framework is presented for aiding strategic decision making in construction PSFs.

9. DEVELOPMENT OF FRAMEWORK AND OTHER CONTRIBUTIONS

9.1 Introduction

Having synthesised the findings from both stages, scope now exists to design a framework for strategic decision-making based on evidences from both stages and the strategy-as-practice strand of the research. A strong rationale for why this is needed is that SAP is an emerging field, and there is currently no SAP focused framework relevant to strategic management in CPSF's, hence it is logical to adopt empirical data (from two standard data analysis stages) in designing one.

9.2 Framework Development

The framework design is outlaid in 5-steps, covering the 3P's of SAP (practitioners, practices and praxis) and drawing conclusions pertaining to the outcomes and impact. Figure 31 outlines the SAP-inspired framework, synthesised from findings from Stages I, II and the summary data in Table 83. This framework is designed in order to be generalisable across the three professions. The framework is outlaid in 5-steps, covering the 3P's of SAP (practitioners, practices and praxis) and drawing conclusions pertaining to the outcomes and impact. These five steps are now summarised thus:

9.2.1 Step 1

This step involves identification of the key strategists within the practice and their characteristics (practitioners). During this step, which is mostly reflective, requires a practical assessment of who the strategists are within the business are and their unique characteristics e.g. *risk attitude, strategic type, leadership styles etc.* These characteristics, identified in the literature review and two stages of data analysis are used

to produce guidelines that are now included in the framework (see Figure 31).

- **Who the strategists are:** The data from the qualitative phase showed that a diverse set of individuals are involved in the work of strategising (see section 7.2 and 8.6.2). This includes staff members from all levels of the organisation – whether top/mid level management or general employees/external consultants (Whittington, 2006; Jarzabkowski and Whittington, 2008; Nordqvist & Melin, 2008)
- **Nature of the strategist (strategic type):** Miles and Snow (1978) strategic types
- **Risk Attitude:** Although the data from the current study outlines that strategists within the current Irish CPSF sector are predominantly *managers* (slightly risk savvy), firms should be able to customise the configuration of their strategic decision-making team, based on the current direction of the company. Ingram & Thompson (2012) risk attitudes are adopted in the framework, as they were the benchmark used in the main study.
- **Leadership style:** This criteria was included in the qualitative phase as part of the themes emerging from the pilot phase of the interviews. Four main leadership styles were explored namely *authoritative, benevolent, consultative and participative leadership*, using works by House & Dressler (1974) and Liu et al. (2003) as reference points.
- **Dynamic Capabilities:** This component is one of the means through which firms can enhance strategic decision-making in changing environments (Wang and Barney, 2006). Dynamic capabilities were prominent in the qualitative phase of data gathering, and involve the processes by which resources (-professionals or practitioners in the case of PSFs) can be leveraged to adapt during decision-making

in changing environments (Teece et al., 1997; Eisenhardt and Martin, 2000).

9.2.2 Step 2

During this step, the three categories of practices as put forward by Whittington et al. (2006) is expounded (see section 8.6.1), and divided into *strategy workshops, project management activities and creative artefacts*. During this step, firms are enabled to identify activities that strategists undergo or need to undertake during the decision-making process. These practices cover a wide range of processes, which includes *drawing up project plans, timelines, revenue plans, work schedule* etc. It is important to note that the 3 P's (practitioners-practices-praxis) sequence adopted in the framework has already been prescribed by Jarzabkowski (2005), however, this framework is introduced in response to the calls by Jarzabkowski and Spee (2009) for researchers to develop links between micro and macro phenomena within strategy studies and the importance of developing outcomes. Hence, the framework is novel in that it responds to calls to explore the embedded nature of strategy making and the localised interactions that shape and are shaped by the wider environmental context (Contu and Willmott 2003; Chia 2004).

9.2.3 Step 3

This step involves identification of the strategy praxis elements i.e. strategy tools, and these tools range from creative tools such as innovation workshops and blue-sky thinking meetings, to technological tools such as software, hardware and cloud storage. Fenton & Langley (2011) stressed the need for linking praxis tools to the previous two P's (i.e. practitioners and practices) in order to generate what is then conceived of as strategy (strategic decision-making in this case). The inclusion of this step summarises the movement from the strategists to the activities as the seeds for new strategic decisions.

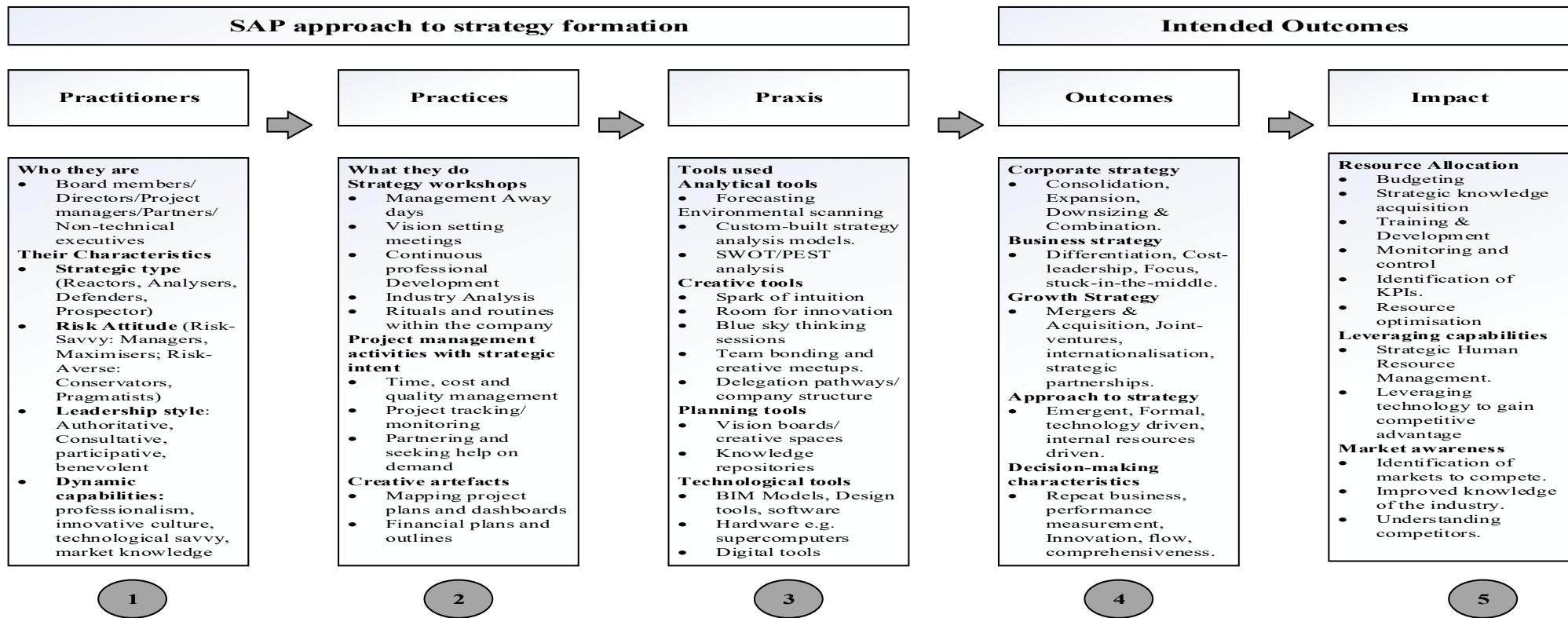


Figure 31 Framework for Strategy formation using SAP lenses

9.2.4 Step 4

During this step, the outcomes of the 3 P's begin to emerge, and at this stage, the strategist can begin aligning the three P's to make strategic choices. This is a very critical step in the strategy formation as the choices selected here leads to **Step 5**, which involves resource allocation, leveraging of capabilities and a deeper understanding of the market and competitors. The need to have an outcome for the three P's was reiterated by Jarzabkowski & Spee (2009), who argued that SAP research needs to move beyond rich descriptions of phenomena to substantiating outcomes. This is also crucial, because strategy in itself is particular about with performance outcomes, and this step was included as a means of informing practice as well as to establish what outcomes are applicable (Jarzabkowski et al. 2007; Johnson et al. 2007; Whittington 2007).

The SAP framework was developed based on the findings in both stages of the study, and the three P's in SAP emerged as reliable predictors in strategising in CPSFs in line with the current state-of-the-art in strategic management research. Strategy-as-practice is part of a broader concern to humanise management and organisation research (Pettigrew et al, 2002; Weick, 1979), and this framework takes great care to include the human element, addressing the criticism of earlier models that are heavily process focused and prescriptive (Jarzabkowski, Balogun and Seidl, 2007).

The validation phase for the framework was done in two phases and explained in the next section.

9.3 Validation of SAP Framework

The first validation phase was done theoretically, while the second was done practically via industry practitioners. In the theoretical phase, the following steps were taken:

- First, the sample size in both stages of the study leading up to the production of the framework was large and considered significant to reflect that of the population. In addition, two-tier triangulation of the data was conducted for quality assurance and reliability.
- Secondly, a subsequent triangulation of data with the literature was conducted before developing the SAP framework, with a well-documented audit trail of materials and processes (Rodgers & Cowles, 1993; Carcary, 2009)
- Thirdly, multidimensional analysis using case-orientated profiles (three cases: architectural, engineering and surveying) was adopted (Miles & Huberman, 1994; Jansen, 2010), with multiple professions surveyed before reaching drawing conclusions. This was done via synthesising findings from across three different professions in the same industry and the framework developed from the findings.
- Respondent verification was employed in both stages of the study as recommended by George & Apter (2004), hence further ensuring reliability. Hence, the author is aware of those involved in the study and how the data was handled.

In terms of further reliability of the framework, the study ensured that there can be exact replicability of the processes and the results in the study by providing as much details as possible in the data collection and analysis phases. Since the framework is only for guidance in revealing the practices/processes in strategic decision-making, and not a rigid process map, the top priority was to ensure consistency (Carcary, 2009; Grosseohme, 2014). The framework in figure 31 stays within the margin of variability for strategy-as-practice based studies as the themes are consistent and ontologically similar to those in seminal SAP work (cf. Lowstedt, 2015; George, 2016).

A second level of validation was undertaken to further strengthen the framework. In this phase, the framework and its augmented version was shared via email to the 27 respondents who took part in the qualitative interviews. Four key questions were asked from the respondents in the validation phase, addressing the following areas:

- i. relevance to strategic decision-making in practice.
- ii. whether or not the framework was reflective of the strategic decision making process in practice.
- iii. elements of the framework that needed to be deleted (not relevant)
- iv. elements that needed to be added to the framework.

The response rate for the validation phase was 51.85% (i.e 14 responses recorded out of 27 emails sent out) and presented in figure 32.

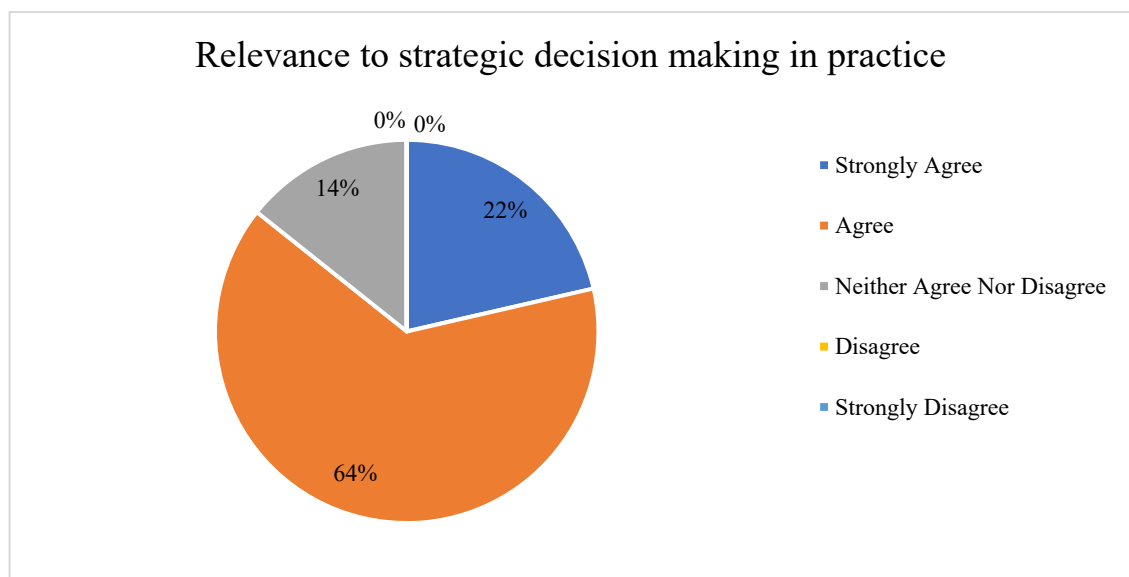


Figure 32 SAP Framework Validation: Relevance

In response to the question on relevance of the framework, 86% (64% Agree; 22%

Strongly Agree) of the respondents agreed that the framework was relevant to strategic decision-making within industry, while 14% were undecided. There were no respondents who disagreed or strongly disagreed with the relevance of the framework to decision-making in practice.

A similar statistic was recorded in the question as to whether the framework is reflective of the strategic decision-making process in the industry (92% agree/strongly agree), but this time, 8% of the respondents disagree that the framework was reflective of what happens in practice. This minor proportion of the result may be explained by the fact that the respondents were made up of people from three different professions, who perceive things differently and the generic nature of the framework may not be applicable across all. Figure 33 highlights the data from this question in the validation phase.

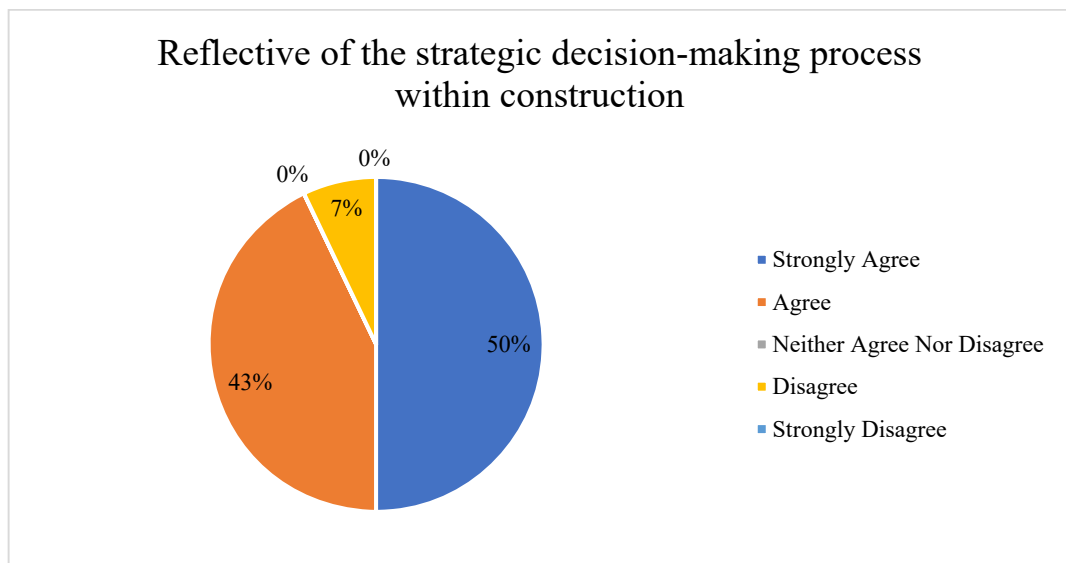


Figure 33 SAP Framework Validation: Reflection of strategic decision-making in practice

The last two questions in the secondary validation phase addressed suggestions for additions or deletions to the framework. Regarding deletions, all respondents agree that

the components in the framework are sufficient and there is no need to delete anything from its components. Only one respondent commented that “...*not all elements may be applicable to particular firm*”, which is understandable, given that the firms in the sample are not homogenous (i.e. different firm types). As noted previously, however, the framework is not intended as a rigid prescriptive tool.

In terms of components that need to be added to the framework, only three comments were raised including the following:

- The need for the inclusion of lower technological tools like Excel (basic data usage) and Project Management techniques whether formal (digital) or informal (analogue)
- The need to consider management and regular reviews of all strategies & tools.
- Human element and cultural strategy

Having outlined the process for validation of the framework, the evidence supports the viability and relevance of the framework to theory and practice. The two-tier validation process (theoretical and practical) further strengthens the rationale of arriving at the framework and validation of it.

The fully validated framework and its augmented version showing meaning of component terms is included in Appendix Y, while the raw data of the validation phase is appended in Appendix Z.

The test/validation of the framework was successful as above 90% of respondents agree to the relevance and applicability of the framework for decision-making. A comprehensive summary of other key findings in the study are summarised next.

PART V: RESEARCH CONTRIBUTIONS, CONCLUSIONS & RECOMMENDATIONS

PART V: RESEARCH CONTRIBUTIONS, CONCLUSIONS AND RECOMMENDATIONS

Summary of Findings	Contributions	Limitations	Recommendations
Updated insights on Irish CPSF Strategy	Contribution to Knowledge	File Drawer Problem	Political Context
Size is critical	Theoretical & Conceptual	Lack of strategy studies in Irish Construction	Incorporating additional decision-making characteristics
QS and ARCH similar/ENG firms different	Methodological Contributions	Cross Sectional nature of study	Linking to Performance
Knowledge Acquisition is driven by Social Contagion (Emergent)	Contribution to Practice	Limited statistical analysis	Conceptual & Methodological recommendations
Primary Corp Strategy: Expansion	Contribution to Industry		Investigate Technology
Primary Bus. Strategy: Differentiation			International Comparisons
Strategic type and Approach to strategy: Dynamic			
Key Internal Dimension: Repeat Business			
Key Evaluation Dimension: Setting Clear Numerical Targets			
Key External Dimension: Competitor Analysis			
Strategy-As-Practice Framework			

10. CONCLUSIONS AND RECOMMENDATIONS

10.1 Introduction

This research set out is to answer the following research question:

What are the strategy processes deployed in high knowledge-intensive professional service firms within the construction market in Ireland?

The aim of the research is stated as follows:

To determine the strategy process/practices within Irish construction professional service firms (CPSF's) and to explore the extent of convergence/divergence across professions.

In addressing the research question and aim stated, this research has provided key empirical, evidence-based insights.

(1) the nature of strategy process in individual construction professional service firms in Ireland, (2) comparative analytics of the processes across architectural, engineering and surveying practices, and; (3) strategy-as-practice in construction PSFs and guidelines for strategy formation using SAP.

In this concluding section, the key theoretical contributions and the implications for practice of the thesis are discussed. The research contributes to the fields of strategic management, construction management and PSF studies. Following the presentation of theoretical contributions, practical and industry implications, the limitations encountered during the research are then acknowledged. The chapter concludes by making a number of suggestions of areas for future research.

10.2 Research objectives and how they have been met

This research was undertaken in two stages (*Stage I- quantitative and Stage II- qualitative*), with the purpose of reaching the research aims and objectives.

The aim of the research is:

“To determine the strategy process/practices within Irish construction professional service firms (CPSF’s) and to explore the extent of convergence/divergence across professions.”

In order to achieve the research aim, the research objectives identified include:

1. to ascertain the characteristics of the strategy processes in Architectural, Engineering and Surveying (AES) firms in Ireland.
2. to identify the extent of convergence or divergence in the strategy process across AES firms in Ireland.
3. to conduct a cross professional analysis of strategy processes in the three professions, identifying similarities and dissimilarities between same and seeking to establish whether or not findings can be generalised across all three professions.
4. to apply the emerging strategy-as-practice approach to CPSFs, exploring the practitioners, practise and praxis strands of strategy within these firms.
5. to develop a framework for construction practitioners to adopt in the strategy formulation process, specific to construction PSFs.

Both stages of the research addressed objectives one to three above, adopting a widespread survey in which 225 AES practices across Ireland participated. The study

yielded a large amount of data, which, hitherto, has not been available on an empirical basis across all three professions, thus providing a critical contribution to the body of knowledge in the field. Across the two stages of the study, it was revealed that strategy processes across the three professions are influenced the most by size of the firm. Key differences exist in the strategy processes across SMEs and large practices, with SMEs showing much lesser tendency to take risks than large firms do.

Another key area where SMEs differ from large firms is that SMEs identify as primarily “reactors” in their strategic type as opposed to large firms who are primarily “defenders”. The approach to strategy in these firms (SMEs) therefore tend to be emergent, while their large counterparts exhibit a more formal and planned approach to strategic decision making. In addition, SMEs are less likely to having a written, formal strategic plan whereas almost all of the large firms sampled have a written strategic plan.

The research also discovered that the ownership structure of a firm plays a significant role in the strategic management process, with sole proprietorships, partnerships and public limited companies showing similarities in their strategy process, while firms owned privately and by global consortiums displaying a different cluster of characteristics. Private practices and those linked to a large international construction consultancy practice tend to have a formal process and a written plan, which is developed following comprehensive analysis of the environment and with participation from numerous levels of the organisation. This is in line with Murphy’s (2011) conclusion for QS firms in a global consortium; however, this study contributes further by the introduction of privately owned firms into the same strategy cluster and across different professions.

Perhaps one of the most critical findings in the research is the effect that firm age has on

the strategy process. Firms with an age of < 5years (founded after 2013) and > 20 years (founded before or in 1998) have similar process characteristics, while firms between 5-20 years of age have similar characteristics. This may be due to the similarity in the business environment in these time periods.

The characteristics of these CPSFs has been identified in the study at this stage and the extent of divergence based on distinct process characteristics identified, meeting *objectives 1 and 2*.

In reaching objective 3 (cross-profession comparison), the strategy processes in QS and Architectural firms were found to be rather similar, while that of consultant engineering practices differ considerably from the two. QS and ARCH firms are similar in terms of risk attitude, strategic typologies and business attitude, which provides unique insight into the background and strategic decision making of two important stakeholders in a construction project team. Previous research into professional service firms have either been focused on single professions within Irish CPSFs (Murphy, 2011; Mcquillan, 2013), or assumed homogeneity in the strategy process across the three professions (e.g. Ling et al., 2005; Li & Ling, 2012). This study uncovers notable differences in the decision-making process across professions, and with the extent of collaboration required across the professions this divergence in strategic decision making processes may affect project-level outcomes.

The study was conducted in two stages due to several reasons. One of these is to strengthen the findings of *Stage I*, with the results bearing similarity with that explored in the first stage. Secondly, this stage was used to address **objective 4**, which was to apply the strategy-as-practice view to exploring strategy in construction PSFs. The

overwhelming majority of process characteristics uncovered as part of Stage I were supported by the findings in Stage II. The second stage provided deeper insight and meaning as to why and how these firms varied in their strategic decision-making.

A critical finding from this stage of the study lies in the insight garnered into the knowledge acquisition process in CPSFs, which is primarily driven by social contagion. CPSFs do not appear deliberate in their knowledge acquisition process, which is driven chiefly by external forces such as professional bodies and industry environment, validating the theoretical model put developed by Seriki & Murphy (2018). The model is contained in Appendix L.

The analysis in both stages led to the development of a framework for adopting a SAP lens to strategy formation within CPSFs, which answers **objective 5**. This objective is critical to the study, as it forms the capstone of the research as well as paves a path for the application of SAP to strategy formulation in construction PSFs. The framework developed in figure 31, points to the key strategy-as-practice metrics to be considered during strategising, yet remains flexible enough for use across the three professions in question. The SAP framework was validated using a two-staged process, and feedback from the second stage of validation in particular confirms reliability of the framework for use in practice. The empirically developed framework represent a significant contribution to knowledge within the field of strategic management in construction, specifically in AES practices and most notably in an Irish context (although it could potentially be replicated elsewhere).

At the time of writing, this study was the sole industry-tested framework for strategic decision making across a number of CPSFs in Ireland.

10.3 Contributions of the Research

A number of notable contributions arising from the research are evident across several facets, namely: knowledge contribution, theoretical contribution, methodological contribution, contribution to professional practices and industry contribution.

10.3.1 Contribution to Knowledge

This research extends the knowledge of strategy process and practices in CPSFs in Ireland, making several noteworthy contributions to the knowledge of strategy within firms that have previously been considered on a silo basis.

The first contribution is the discovery that size is a critical determinant in the decision-making process of construction PSFs, as the size of a firm determines the formality of the strategy process and the existence of a written strategic plan. In addition, in SMEs, strategy is emergent, while in large firms, strategy is planned. Size also has a moderating effect on the strategic type, risk attitude and growth strategy adopted by firms. While SMEs are primarily reactors, large firms are mainly defenders in terms of strategic type. Furthermore, SMEs are mainly mid-risk in terms of their risk attitude, while large firms have a high affinity for risk (maximisers). Additionally, SMEs grow primarily via strategic partnerships, while large firms seek to internationalise. The importance of size to the strategy of firms cannot be overemphasised as it has been outlined by earlier construction researchers (e.g. Hua, 2007; Anikeeff & Sriram, 2008; Connaughton, Meikle & Teerikangas, 2015).

The importance of size on the strategy process is therefore critical, particularly within the context of strategic decision-making, given the ratio of SMEs to large CPSF's in Ireland.

Although there remains a concentration on larger (contractor) construction firms within existing empirical studies, this study constitutes a significant step forward in addressing the gap in knowledge about small and medium sized CPSFs. In addition, the study has extended the findings of Murphy (2011), Flemming (2011) and McQuillan (2013) by exploring consultant engineering firms in addition to QS and architectural practices, which have previously been unexplored in strategy research.

Furthermore, the research findings contribute to the existing knowledge of SAP by providing insights on CPSF's, which have hitherto been unexplored. This is the first time that SAP has been used to explore CPSFs, and the largest study so far documenting both process and practice strategy perspectives of these firms. Lastly, the study has developed and tested a framework for strategic decision-making in CPSFs, which provides critical contribution to knowledge.

10.3.2 Theoretical and Conceptual Contributions

This research investigation has made four significant conceptual contributions to strategic management, construction management and PSF literature:

- (a) incorporated a theoretically grounded approach to the study of strategic decision making process in construction PSFs,
- (b) Conducted the first comparative analysis of the strategic decision making process across the three main professions in construction in Ireland,
- (c) Assessed strategic decision making using the SAP framework within construction PSFs, and;
- (d) proposed a strategy framework for the decision making process in CPSFs.

The first conceptual contribution is that from the literature review through to the discussion of results, the research investigation adopted key seminal theories (e.g. Porter's generic strategies, 1980; Miles & Snow typologies, 1987) to derive meaningful insights into strategic decision-making in construction PSFs. The theories adopted in the study blended both process elements of strategy (e.g. formality and approach) as well as the characteristics of the practitioners involved (e.g. risk attitude and strategic type) amongst other elements. The study linked the decision making characteristics studied to theoretical underpinnings, and given that not all the empirical evidence aligned with established theory, it clearly demonstrates the necessity of the further refinement of theories to ensure their applicability to construction PSF's. By incorporating diverse theoretical viewpoints such as the resource-based view (RBV) and strategy-as-practice (SAP), this study offers valuable insights for multi-theoretical approaches to studying strategic decision making within various industry sectors, including construction. This contribution is unique in the ability to combine two unique and almost opposite views of strategy to examine decision making in CPSFs.

The second theoretical contribution is that previous studies relating to strategy in construction PSFs focused on single professions i.e. investigating only one profession and adopting only either qualitative or quantitative analysis (cf. Murphy, 2011; Flemming, 2011; McQuillan, 2013). This study drew on the gaps identified in previously published studies to explore strategic decision making holistically across three main professions in the construction sector in Ireland, being the first of its kind within Ireland. Adopting this multidisciplinary approach to the study enabled similarities and differences across individual professions to be identified and related to strategic decision outcomes. In line with calls for increased collaboration and multidisciplinary perspectives to construction

studies, this study provided critical data on cross-professional analysis to strategic decision-making, thus paving the way for further multidisciplinary investigations for strategy scholars in construction.

The third significant contribution to theory is that the study addressed calls by strategy scholars for the exploration of strategy from a practice perspective, related to investigating strategy as something firms “do” as opposed to “have” (George, 2016). The SAP view incorporated in Stage II of this study addresses these demands, with the findings highlighting that strategy practitioners (i.e. those who engage in strategic decision making) are not limited to top managers alone, but comprises of a diverse population, ranging from directors to employees. Thus, a critical finding is that not only senior management staff are involved in the decision making process in CPSFs which concurs with Varyani & Khammar (2010), on the role that managers across all levels play in strategy. In addition, the SAP theme explored in the research highlights complex interactions between a diverse set of practitioners, processes and documents. The successful inclusion of the SAP theory in the research further reinforces that any one theory may not suffice to exhaustively explore the strategic decision-making process within CPSFs, as both process and practice viewpoints yielded complementary insights. The adoption of multi-theoretical viewpoints on the different dimensions underlying strategic decision-making indicates that each dimension might require a different theory to derive meaningful conclusions specific to the construction sector.

The fourth and perhaps, most significant conceptual contribution is the successful development and testing of a SAP-based framework for strategic decision making in construction PSFs. In doing so, the research clearly contributes to the evolution of

strategic management in construction by introducing a frame of reference for strategic decision making which incorporates components of SAP (i.e. practitioners, practise and praxis). Strategy managers or any participants in the strategy formulation process can use the framework proposed as it incorporates all three aspects of strategy-as-practice, while also including many of the process characteristics investigated in the study.

The framework blends the strategy-as-practice lens with the resource-based view of strategic management, and provides a guideline for firms seeking to develop a strategic plan. The framework also advances strategic management scholarship on the decision making process in construction PSFs by producing the first of its kind SAP-process based framework for decision-making, offering a fundamental building block for a new blended theory.

10.3.3 Methodological Contribution

The key methodological strengths of this study are its cross-sectional nature and robust sample size in the quantitative and qualitative stages. The methods used for this study can be considered robust, defensible and replicable (Holt & Goulding, 2017) across other industries and business environments elsewhere in the world. This is the first known study to adopt both the *process and practice views* of strategy concurrently, thus providing an advantage over single view studies. Taken together, these findings suggest a role for promoting multi-theory and multimethod approach to studying strategy, as the development and testing of the research instruments was detailed (Kelley et al, 2003).

The findings also reinforced the feasibility of incorporating a comprehensive SAP approach in construction PSF research, as it seems that, in its very nature, SAP studies provides deeper insights on the firm actions and attributes than process-focused studies.

Lastly, the rigorous qualitative analysis framework adopted in the study can be replicated for cross-professional studies in construction, especially studies involving multiple professions and complex stakeholder relationships.

10.3.4 Contribution to Practitioners / Professionals

Several noteworthy contributions to practitioners/professionals have been identified emanating from the research, ranging from the understanding of the unique decision-making characteristics employed within each profession to streamlining the similarities across each profession into the framework for strategic decision-making in practice, specifically for construction PSFs. The most notable contributions are as follows:

- Defining the critical areas of the strategic decision-making process that CPSFs should focus on when initiating plans for the future of their organisation.
- Demonstrates that the approach taken by most CPSFs to strategy is emergent, highlighting the increasing rate of change and complexity in the business environment (Mintzberg, Ahlstrand, & Lampel, 1998). Practitioners can learn from this, and design their strategies accordingly as the industry keep changing in the face of technological and legislative advancement.
- Competitor analysis is found to be one of the most critical areas in strategic decision making for firms in the construction sector, and this is critical for future collaboration in different construction project teams. Since most of the firms only adopt passive competitor analysis, it may pose an issue given its importance to decision-making.
- Findings from this research demonstrate the move towards a more systematic strategic planning process, yet the lack of training received in this regard as part of the education process. The opportunity now exists for professional bodies to incorporate

strategic management in future Continuous Professional Development (CPD) design. When confronted with strategy formulation, there is no one-size-fits-all approach for CPSFs, however the framework developed remains sufficiently flexible for use across other professions within construction or perhaps other PSF's in other sectors.

10.3.5 Contribution to Industry

Strategic decision-making is considered “messy and difficult” (George, 2016), and in the construction industry in particular, the process has been criticised of being very slow to evolve (Sambasivan et al., 2017). The findings from the research can ease the messiness and catalyse the strategising process, particularly for industry. This makes it easier for firms in the sector to recognise these differences and leverage them when formulating strategy. Other key contributions to industry include:

- Assist PSFs in the construction sector in aligning operations, resources and management towards their selected strategic choices.
- Support firms in defining their knowledge acquisition priorities and process.
- The framework in the study also acts as a guide for practitioners, guiding them to take into account individual organisational contexts in the strategic decision making process.
- In PSFs, where their performance is considered “*hard to measure*” due to intangibility of output, the amount of repeat business generated presents an alternative for strategic decision quality measurement from an industry viewpoint.
- Lastly, adopting the SAP lenses presents an opportunity for the overall construction sector to explore the social dimensions of their decision making process. Practitioners within the sector can now identify the right questions to ask themselves when

designing overall industry-wide strategy.

As firms within the industry are being encouraged to collaborate more, despite having different strategic goals, the SAP framework produced across the different professions is a critical achievement in fostering collaboration. The simplicity of the framework developed also contributes to the debate on the usefulness of mathematical models in practice. The framework is easy to use and straightforward as strategy scholars have long criticised mathematical frameworks for being dominated within the construction research (Koskela, 2017; Seriki & Murphy, 2018).

The SAP framework was designed from data obtained from the industry and validated by industry practitioners, strengthening its utility and relevance to the Irish construction sector. Overwhelming evidence from industry practitioners points to the application of the framework in practice, and potential for widespread adoption for strategic decision-making within construction. Therefore, now that the process of strategising in construction PSFs have been identified, and their strategic choices outlined, an opportunity now exists for the application of technology to support the decision-making process. The role of technology remains outside the scope of the research, however potential for future investigation exists in the context of strategic decision making in CPSF's.

10.4 Limitations

In spite of the considerable contributions made, a number of limitations of the study remain. Some of these limitations are now explored in detail.

In the first instance, there was a limitation when conducting the systematic literature review based on articles published in academic journals. Rosenthal (1979) described this

as the *file drawer problem*, which implies a bias of selection of academic articles to review. The author acknowledges that there may have been studies that may have been missed due to the file drawer problem, which could have informed richer insights in the literature review.

Next, there is a paucity of published industry related research focusing on the Irish construction sector, particularly regarding PSF's. This meant that the primary sources for information on PSFs were sourced from the US, UK, China or other parts of the EU, whose contexts may not be wholly applicable to the Irish context. The strategic management of PSFs is unique (Lowendahl, 2010), and one cannot assume that circumstances applicable in these countries will apply in the Irish contexts. However, the lessons from this study, although presented specifically from an Irish context, are potentially replicable across similar business environments across Europe and beyond.

A third limitation in the study is its cross-sectional nature. Both stages of the study (quantitative and qualitative) draw were undertaken in a relatively confirmed period. As a result, the conclusions drawn from the study may be limited to being associative (i.e. exploratory) as no assumption of causality can be made (Lee, Benoit-Bryan, and Johnson, 2012; George, 2016). However, this limitation was reduced drastically as the evidence presented in the study was from multiple sources involving two distinct phases or research, reducing the risk of common source bias (Jakobsen and Jensen, 2014).

The fourth limitation is with respect to the decision not to include statistical analysis in the quantitative or qualitative stages of the study. The decision not to include mathematical regressions within the quantitative stage, presents some important limitations when compared with other strategy mainstream studies (e.g. Pamulu, 2010;

Oyewobi, 2014). This exclusion is justified because the study is industry focused, and practitioners required implementable and flexible approaches that is not available in such complex mathematical abstractions. In addition, the aim of the study was to generate findings that are associative and not causal in nature (i.e. exploring the process involved in strategic decision-making, not to explore causality).

Additionally, the current study did not consider the current socio-political context (Owusu-Manu et al., 2017), technology (Henderson & Ruikar, 2010), and the international dimensions (Tansey, 2018) of strategic decision making, which are popular factors that are thought to influence strategic decision-making within mainstream studies. This adds yet another layer of limitation to the current study.

Finally, the scope of the study was limited only to professional architectural practices, consultant engineers and professional QS firms. Due to this defined scope, there was limited participation from other professions or construction industry stakeholders (e.g. construction managers, structural engineers, contractors etc.).

Notwithstanding these limitations, the study has provided robust and important insights into the process and characteristics of strategic decision making in Irish construction PSFs. These limitations of this study, coupled with the conclusions drawn are now used to make recommendations for future studies.

10.5 Future research

There are several recommendations for future research in strategic decision-making in construction PSFs, and these are treated in detail in this section. Key among these is that future research can build on the multi-theoretical findings in this research by further

complementing the often process-focused nature of strategy studies – *typically centred on regression and multivariate analysis* – and instead, investigate them using SAP focused themes (e.g. nature of participation, innovative tools, group decision making, leadership styles). In addition, further studies can avoid the ‘file drawer’ problem by adopting a wider theoretical base, covering broad range of strategy studies across management, construction and psychology, eliminating the possibility for bias.

Other key recommendations for future research are itemised below:

10.5.1 Political Context

Strategy studies in construction such as Dansoh (2005) and Li & Ling (2012) include the political context when studying strategy; however, this theme was not explored in the current study. This was due in part, to the lack of clarity as regards Brexit at the time of writing. It may be useful for future studies to consider the influence of political forces on the strategic decision-making process. How the political landscape of the business environment in addition to organisational politics interact throughout the strategy formation process is recommended as a focal point of future research.

10.5.2 Additional Strategy Process Characteristics

Although the research investigated a number of important strategic decision-making characteristics, there is an opportunity to extend future research scope to include additional characteristics, such as the leadership style or of dynamic capabilities in the decision-making process. Typically, the leadership style of the strategist is assumed to affect the decision-making process because it determines whether others are allowed to participate in the process or not, and their level of participation. The topic of leadership styles within construction PSFs remains under-investigated thus presents an opportunity

for future research.

In addition, while firm age is an important characteristic under scrutiny, a further extension of analysis to measure path dependency could usefully be undertaken.

10.5.3 Strategy Process Characteristics and Firm Performance

The research focuses on the strategic decision-making process in construction PSFs; however, the relationship between strategy and firm performance was not investigated as part of the research. While the importance of the strategy and firm performance relationship is acknowledged, given the sensitive nature of performance criteria, and the challenge of measuring on a comparable basis across three professions working within a project-centric industry sector was deemed beyond the scope of the research.

However, an opportunity now exists to determine comparable performance metrics for CPSF's, to include for example financial, number of projects won, market share, or number of repeat clients retained. Specifically, it would be beneficial for CPSF's to be able to benchmark firm performance against strategic decision-making (process and choices) during the implementation phase. Strategy formulation is critical; however, its success depends on timely and effective implementation.

10.5.4 Conceptual and Methodological Recommendations

The theoretical approach employed in the research uncover some further research prospects. Whereas this study focused on a dynamic mix of the resource-based view (RBV), knowledge based view (KBV) and strategy-as-practice (SAP) views, potential now exists to extend the multi-theory analysis to include, for example, the market-based view (MBV) or dynamic capability view (DCV) of strategic decision-making.

From a methodological perspective, several future paths are available for construction researchers studying strategy in CPSFs based on the findings of this study. First, it is recommended for future researchers to consider an ethnographic element into the studying of strategic decision making in construction. Apart from going beyond prescriptive models and associative findings, ethnographic analysis in construction helps to understand how strategic decision-making is done in practice within organisations (Lowstedt, 2015).

Data collection methods such as focus groups can contribute to richer organisational data outcomes and more qualitative approach to studying strategic decision making. There remains limited utilisation of focus groups despite its proven effectiveness in producing more fully articulated opportunity to observe the process of sense making in action (Wilkinson, 1998). This is particularly evident within a construction sector context.

Finally, following the recommendations of George (2016), there is a need to incorporate experimental methods and theories derived from psychology and organisational behaviour into strategy studies. This is especially useful in the area of social contagion in knowledge acquisition, which was highlighted by Seriki & Murphy (2018).

10.5.5 Investigate Technology in Strategic Decision-Making

From the analysis in the qualitative phase, technological tools were mentioned as part of the tools used in strategic decision-making. Now that strategic decision-making has been understood from both process and practice viewpoints, the role that technology plays in strategic decision-making and how these can be gamified using game theory or artificial intelligence (AI) tools could usefully be the subject of future investigation. These outcomes might be particularly relevant in construction PSFs, who are witnessing

technological disruption. As Farmer (2016) put it, construction firms need to “modernise or die”.

10.5.6 International Comparisons

This study has conducted a cross-professional analysis of the strategic decision-making process across firms within Ireland. Future studies might consider cross-border decision-making process, exploring whether geographical contexts affect the decision-making process.

Furthermore, the research was undertaken in Ireland, a developed country that has undergone a period of significant cyclical fluctuation. The opportunity now exists for the research to be replicated in another country, be it a developed or a developing, for the purposes of international comparison. The current methodology is tried and tested for widespread use across professions, and an opportunity now exists for future studies to adopt same survey tools across international contexts.

REFERENCES

- Aaltonen, P., (2007). Adoption of strategic goals: exploring the success of strategy implementation through organisational activities.
- Abowitz, D.A. and Toole, T.M., (2010). Mixed methods research: fundamental issues of design, validity, and reliability in construction research. *Journal of construction engineering and management*, 136 (1), 108–116.
- Abdul-Aziz, A.-R. & Wong, S.S., (2010). Competitive Assets of Malaysian International Contractors. *Journal of Financial Management of Property and Construction*, 15(2), pp.176–189.
- AECOM Ireland., (2019). AECOM - Ireland Annual Review - Taking the Long View. [online] Available at: <https://ireland.aecom.com/> [Accessed 20 Oct. 2019].
- Aharoni, Y. (1993), In Search For the Unique: Can firm specific advantages be evaluated? *Journal of Management Studies*, 30: 31–44.
- Akhter, S.H. (2003). Strategic planning, hyper competition, and knowledge management. *Bus. Horiz.* 46, 19–24. [https://doi.org/10.1016/S0007-6813\(02\)00275-6](https://doi.org/10.1016/S0007-6813(02)00275-6)
- Akintoye, A., McIntosh, G. & Fitzgerald, E., (2000). A survey of supply chain collaboration and management in the UK construction industry. *European Journal of Purchasing & Supply Management*, 6(3–4), pp.159–168.
- Aldehayyat, J.S., (2011). Organisational characteristics and the practice of strategic planning in Jordanian hotels. *Int. J. Hosp. Manag.* 30, 192–199. <https://doi.org/10.1016/j.ijhm.2010.05.001>.
- Alsem, K.J., (2019). Competitor analysis, in: *Applied Strategic Marketing*. Routledge, Abingdon, Oxon ; New York, NY : Routledge, 2019. | “Published in Dutch by Noordhoff Publishers, 1993, 2017.” pp. 171–195. <https://doi.org/10.4324/9780429823374-9>.
- Abbott, A. D. (1988). *The system of professions: An essay on the division of expert labour*. Chicago, IL: University of Chicago Press.
- Alam, A. and Khan, S. (2014) ‘Strategic Management: Managing Mergers & Acquisitions’, *International Journal of BRIC Business Research*, 3(1), pp. 1–10.
- Aldrich, H. and Zimmer, C., (1986) Entrepreneurship through social networks, in D.L. Sexton and R.W. Smilor (eds): *The Art and Science of Entrepreneurship*, Ballinger, Cambridge, MA, pp. 3–23.
- Alvesson, M, and K Sköldbberg. (2009). *Reflexive Methodology: New Vistas for Qualitative Research*. SAGE Publications. <https://books.google.ie/books?id=32G4M7-20xgC>.
- Alvesson, Mats, and K Sköldbberg. (2009). “(Post-)Positivism, Social Constructionism, Critical Realism: Three Reference Points in the Philosophy of Science.” *Reflexive Methodology: New Vistas for Qualitative Research* 15:15–52.

<https://doi.org/10.1080/13642531003746857>.

- Amonini, C. et al. (2010) 'How professional service firms compete in the market: an exploratory study', *Journal of Marketing Management*, 26(1–2), pp. 28–55. doi: 10.1080/02672570903534662.
- Anand, N., Gardner, H., & Morris, T. (2007). Knowledge-based innovation: Emergence and embedding of new practice areas in management consulting firms. *Academy of Management Journal*, 50(2), 406–428.
- Anderson, P. (1999), "Complexity theory and organisation science", *Organisation Science*, Vol. 10 No. 3, pp. 216-232.
- Andrews, K. (1971). *The Concept of Corporate Strategy*, Dow Jones-Irwin, Homewood, IL.
- Anikeeff, M.A. & Sriram, V., (2008). Construction management strategy and developer performance. *Engineering, Construction and Architectural Management*, 15(6), pp.504–513.
- Ansoff, H. I (1965) *Corporate Strategy: An Analytical Approach to Business Policy for Growth and Expansion*, McGraw-Hill, New York, 15.
- Ansoff, H., (1988) *Corporate Strategy*, Penguin, , Chapter 6
- Arayici, Y., Egbu, C. & Coates, P., (2012). Building information modelling (Bim) implementation and remote construction projects: Issues, challenges, and critiques. *Electronic Journal of Information Technology in Construction*, 17(May), pp.75–92.
- Arbab Kash, B., Spaulding, A., D. Gamm, L., & E. Johnson, C. (2014). Healthcare strategic management and the resource based view. *Journal of Strategy and Management*, 7(3), 251. <https://doi.org/10.1108/JSMA-06-2013-0040>.
- Ashworth, A., Hogg, K., (2014). Added value in design and construction, *Added Value in Design and Construction*. <https://doi.org/10.4324/9781315839073>
- Atkins S, Lewin S, Smith H, Engel M, Fretheim A, Volmink J., (2008) Conducting a meta-ethnography of qualitative literature: Lessons learnt. *BMC Medical Research Methodology* 2008; 8:21.
- Awuah, G.B. (2007). A professional services firm's competence development. *Industrial Marketing Management*, 36, 106–108. <https://doi.org/10.1016/j.indmarman.2006.08.006>
- Baddeley, M., Curtis, A. & Wood, R. (2005) An introduction to prior information derived from probabilistic judgments; elicitation of knowledge, cognitive bias and herding. In *Geological prior information: informing science and engineering* (eds A. Curtis & R. Wood), vol. 239, pp. 15–27. London, UK: Geological Society Special Publications.
- Baddeley, M., (2010). Herding, social influence and economic decision-making: socio-psychological and neuroscientific analyses. *Philosophical transactions of the Royal Society of London. Series B, Biological Sciences*, 365(1538), pp.281–290.

- Bagnoli, C. and Vedovato, M. (2014) 'The impact of knowledge management and strategy configuration coherence on SME performance', *Journal of Management and Governance*, 18(2), pp. 615–647. doi: 10.1007/s10997-012-9211-z.
- Bailey, K. (2008). *Methods of social research*. Simon and Schuster.
- Balogun, Julia, Anne Sigismund Huff, and Phyl Johnson. (2003). "Three Responses to the Methodological Challenges of Studying Strategising." *Journal of Management Studies* 40 (1):197–224. <https://doi.org/10.1111/1467-6486.t01-1-00009>.
- Barney, J. B. (1995) 'Looking inside for competitive advantage', *Academy of Management Executive*, 100, pp. 49–61.
- Barney, J.B., (2001). Resource-based theories of competitive advantage: A ten-year retrospective on the resource-based view. *J. Manage.* 27, 643–650. [https://doi.org/10.1016/S0149-2063\(01\)00115-5](https://doi.org/10.1016/S0149-2063(01)00115-5).
- Barney, J., Ketchen, D., Wright, M., (2011). The future of resource-based theory: revitalisation or decline? *J. Manage.* 37, 1299---1315.
- Bartol, K. M., & Martin, D. C. (1991). *Management*. New York: McGraw-Hill.
- Balogun, J., (2007). The Practice of Organisational Restructuring:. From Design to Reality. *European Management Journal*, 25(2), pp.81–91. Available at: <http://dx.doi.org/10.1016/j.emj.2007.02.001>.
- Beaverstock, J.V. (2004). 'Managing across borders': Knowledge management and expatriation in professional service legal firms. *Journal of Economic Geography*, 4, 157–179.
- Belmondo, C. & Sargis Roussel, C., (2014). Strategising Routines As the Missing Link Between Strategy Practices and Praxis. XXIII Conférence Internationale de Management Stratégique, p.24.
- Bergeron, F. and Raymond, L. (1992), "Planning for information systems to gain a competitive edge", *Journal of Small Business Management*, Vol. 30, pp. 21.
- Betts, M., Ofori, G., (1992). Strategic planning for competitive advantage in construction.pdf. *Constr. Manag. Econ*.
- Björnström, J. (2007) Communicating strategy for better implementation- Process and tools in a large Swedish construction company. Thesis for licentiate degree. Chalmers University of Technology.
- Bolisani, E. & Scarso, E., (2015). Strategic Planning Approaches to Knowledge Management: a Taxonomy. *Vine*, 45(4), pp.495–508.
- Boothman, C., Craig, N., (2016). Five Star Status in the Uk House Building Sector : a Realistic Indication of Customer Satisfaction or Pure Fantasy ? *Proc. 32nd Annu. ARCOM Conf.* 2, 1303–1312.
- Bouhali, R. et al. (2015) 'Leader Roles for Innovation: Strategic Thinking and Planning', *Procedia - Social and Behavioral Sciences*. Elsevier B.V., 181, pp. 72–78. doi: 10.1016/j.sbspro.2015.04.867.

- Borgatti, S.P. & Parker, A., (2002). Making Invisible Work Visible: California Management Review, 44(2), pp.25–47.
- Borgatti, S. P., Everett, M. G. & Freeman, L. C. (2002). Ucinet6 for Windows: Software for Social Network Analysis. Harvard: Analysis Technologies.
- Bourdieu, P., (1969). Intellectual field and creative project. Information (International Social Science Council), 8(2), pp.89-119.
- Bourdieu, P., (2011). The forms of capital. (1986). Cultural theory: An anthology, pp.81-93.
- Bourque, N. and Johnson, G. (2008), ‘Strategy Workshops and “Away-Days” as Ritual’, in Hodgkinson, G. and Starbuck, W. (eds.), Oxford Handbook of Organisational Decision Making: 552–564. Oxford: Oxford University Press.
- Bowman, C and Ambrosini, V (2000) Value creation versus value capture: Towards a coherent definition of value in strategy. British Journal of Management, 11(1), 1-15
- Boyd, D., Egbu C., Chinyio E., Xiao H., and Lee C., (2004) Learning From Sme Site Managers through Debriefing Introduction To the Study. , pp.1–12.
- Bracker, J. (1980), “The historical development of the strategic management concept”, Academy of Management Review, Vol. 5 No. 2, pp. 219-24.
- Bresnen, M. et al., (2003). Social practices and the management of knowledge in project environments. International Journal of Project Management, 21(3), pp.157–166.
- Brews, P.J., Hunt, M.R., (1999). Learning to plan and planning to learn: Resolving the planning school/learning school debate. Strateg. Manag. J. [https://doi.org/10.1002/\(SICI\)1097-0266\(199910\)20:10<889::AID-SMJ60>3.0.CO;2-F](https://doi.org/10.1002/(SICI)1097-0266(199910)20:10<889::AID-SMJ60>3.0.CO;2-F)
- Brock, D.M., (2012). Building global capabilities: A study of globalising professional service firms. The Service Industries Journal, 32(10), pp.1593–1607.
- Brooks, T. et al., (2016). The impact of the recent economic recession on the operation of the NEC contract in Northern Ireland. Construction Management and Economics, 34(6), pp.393–417.
- Browne, S. Lawlor, K. Sharkey-Scott, P. Cuddihy, L. (2012) Implementation Challenges: Triggers for Interactions in Marketing Strategy Making. 2012. European Group for Organisation Studies (EGOS) conference 2012, Hanken School of Economics, Helsinki, Finland.
- Brunk, S.E. (2003), “From theory to practice: applying miles and snow’s ideas to understand and improve firm performance”, Academy of Management Executive, Vol. 17 No. 4, pp. 105-108
- Bryman, A., & Bell, E. (2007). Business Research Methods (2 ed.). OXFORD University Press.
- Burkhardt, M. and D. Brass. (1990). Changing patterns or patterns of change: The effects

- of a change in technology on social network structure and power. *Admin. Sci. Quart.* 35 104–127.
- Burt, Ronald S. (1987). Social contagion and innovation: Cohesion versus structural equivalence. *Amer. J. Sociology* 92 1287–1335.
- Canavan, D., Scott, P.S., Mangematin, V., (2013). Creative professional service firms: Aligning strategy and talent. *J. Bus. Strategy*. <https://doi.org/10.1108/JBS-10-2012-0058>.
- Capasso, A. & Dagnino, G.B., (2014). Beyond the silo view of strategic management and corporate governance: evidence from Fiat, Telecom Italia and Unicredit. *Journal of Management and Governance*, 18(4), pp.929–957.
- Carcary M. (2009) The research audit trail – Enhancing trustworthiness in qualitative inquiry. [Last accessed on 2019 Mar 03];*Electron J Bus Res Methods*. 2009 7:11–24. Available from: <http://www.ejbrm.com> . [Google Scholar].
- Carley, K. and Kaufer, D. (1993). Semantic Connectivity: An Approach for Analysing Symbols in Semantic Networks. *Communication Theory*, 3(3), pp.183-213.
- Carrillo, P.M., Anumba, C.J. & Kamara, J.M., (2000). Knowledge Management Strategy for Construction: Key I. T. And Contextual Issues. *Constructions Informatics Digital Library*, (December 2015).
- Carvalho, R., Vieira dos Santos, G., Clementino de Barros Neto, M. (2013). R&D+ i Strategic Management in a Public Company in the Brazilian Electric Sector. *J. Technol. Manag. Innov.* 8, 235–256. <https://doi.org/10.4067/S0718-27242013000200019>
- Cavusgil, S. T., & Knight, G. A. (2009). *Born Global Firms-a New International Enterprise*. New York, NY: Business Expert Press.
- Central statistics office, (2019a), Key short-term economic indicators, Gross National Product, viewed 30th September, 2019, <https://cso.ie/indicators/Maintable.aspx>
- (2019b), Volume of production by quarter and type, Production in Building and Construction index, viewed 30th September, 2019, <https://www.cso.ie/en/releasesandpublications/er/pbci/productioninbuildingandconstructionindexquarter22019/>
- (2019c), Employment (ILO) (Thousand) by NACE Rev 2 Economic Sector, Construction, viewed 30th September, 2019. <https://statbank.cso.ie/multiquicktables/quickTables.aspx?id=qlf03>
- (2019d), Business Demography, Size class composition of the business economy 2016, viewed 30th September, 2019, <https://www.cso.ie/en/releasesandpublications/er/bd/businessdemography2016/>
- (2019e), Structural Business Statistics, Gross Value Added in Distribution and Services enterprises by size class 2015-2017, viewed 30th September, 2019, <https://www.cso.ie/en/releasesandpublications/er/sbs/structuralbusinessstatistics2017/>

- Chandler, A. D. Jr. (1962) *Strategy and Structure: Chapters in the History of the American Industrial Enterprise* (Cambridge, MA: MIT Press).
- Charest, F., Bouffard, J. and Zajmovic, E. (2016) ‘Public relations and social media: Deliberate or creative strategic planning’, *Public Relations Review*. Elsevier Inc., 42(4), pp. 530–538. doi: 10.1016/j.pubrev.2016.03.008.
- Cheah, C.Y.J. et al., (2004). Empirical Study of Strategic Performance of Global Construction Firms. , (December), pp.808–817.
- Cheah, C.Y.J. & Garvin, M.J., (2004). An open framework for corporate strategy in construction. *Engineering, Construction and Architectural Management*, 11(3), pp.176–188.
- Cheah, C.Y.J. & Chew, D.A.S., (2005). Dynamics of strategic management in the Chinese construction industry. *Management Decision*, 43(4), pp.551–567.
- Chen M-J. (1996). Competitor analysis and interfirm rivalry: toward a theoretical integration. *Academy of Management Review* 21(1): 100–134.
- Chen, I.J., Paulraj, A., Lado, A.A., (2004). Strategic purchasing, supply management, and firm performance. *J. Oper. Manag.* 22, 505–523. <https://doi.org/10.1016/j.jom.2004.06.002>.
- Chen, P.H., Ong, C.F. and Hsu, S.C., (2016). The linkages between internationalisation and environmental strategies of multinational construction firms. *Journal of cleaner production*, 116, pp.207-216.
- Chenhall, R. H. (2003). “Management Control Systems Design within Its Organisational Context: Findings from Contingency-Based Research and Directions for the Future.” *Accounting, Organisations and Society* 28 (2–3):127–68. [https://doi.org/10.1016/S0361-3682\(01\)00027-7](https://doi.org/10.1016/S0361-3682(01)00027-7).
- Chenhall, R.H., (2005). Content and process approaches to studying strategy and management control systems. *Control. Strateg. Manag. Accounting, Perform. Meas.* 10–36.
- Chia, R., & Rasche, A. (2011). Epistemological alternatives for researching Strategy as Practice: building and dwelling worldviews. In D. de Golsorkhi, L. D. Rouleau, & E. Seidl Vaara (Eds.), *Cambridge Handbook of Strategy as Practice*, sous la direction. Cambridge University Press.
- Chaffee, E.E., (1985). Three models of strategy. *Academy of management review*, 10(1), pp.89-98.
- Charest, F., Bouffard, J., Zajmovic, E., (2016). Public relations and social media: Deliberate or creative strategic planning. *Public Relat. Rev.* 42, 530–538. <https://doi.org/10.1016/j.pubrev.2016.03.008>
- Clarke, A. and Fuller, M. (2010) ‘Collaborative Strategic Management: Strategy Formulation and Implementation by Multi-Organisational Cross-Sector Social Partnerships’, *Journal of Business Ethics*, 94(SUPPL. 1), pp. 85–101. doi: 10.1007/s10551-011-0781-5.

- Clarke, A. and Fuller, M. (2010) ‘Collaborative Strategic Management: Strategy Formulation and Implementation by Multi-Organisational Cross-Sector Social Partnerships’, *Journal of Business Ethics*, 94(SUPPL. 1), pp. 85–101. doi: 10.1007/s10551-011-0781-5.
- Cohen, L., Manion, L., Morrison, K., (2011). *Research Methods in Education*, Research methods in education. https://doi.org/10.1111/j.1467-8527.2007.00388_4.x
- Connaughton, J. et al., (2012). Safety-Knowledge Management in American Construction Organisations. *American Society of Civil Engineers*, 28(April), pp.203–211.
- Connaughton, J, J Meikle, and S Teerikangas. (2015). “Mergers, Acquisitions and the Evolution of Construction Professional Services Firms.” *Construction Management and Economics* 33 (2). Routledge:146–59. <https://doi.org/10.1080/01446193.2015.1037325>.
- Construction Industry Federation. (2019). Turnover for top Irish construction companies reaches €8.39 billion in 2018, an increase of 25% from 2017 - Construction Industry Federation. [online] Available at: <https://cif.ie/2019/06/12/turnover-for-top-irish-construction-companies-reaches-e8-39-billion-in-2018-an-increase-of-25-from-2017/> [Accessed 17 Oct. 2019].
- Contractor, N. S., & Eisenberg, E. M. (1990). Communication networks and new media in organisations. In J. Fulk & C. Steinfield (Eds.), *Organisations and communication technology*: 143-172. Newbury Park, CA: Sage.
- Corporate Real Estate 2020 Final Executive Summary, (2013). Executive summary. *New Dir. Youth Dev.* 2013, 9–13. <https://doi.org/10.1002/yd.20054>
- Coxe, W., Hartung, N.F., Hochberg, H., Lewis, B.J., Maister, D.H., Mattox, R.F. and Piven, P.A. (1987), *Success Strategies for Design Professionals*, McGraw-Hill, New York, NY.
- Cravens, D.W., Piercy, N.F., Baldauf, A., (2009). Management framework guiding strategic thinking in rapidly changing markets. *J. Mark. Manag.* 25, 31–49. <https://doi.org/10.1362/026725709X410025>
- Creswell, J.W. (2011). *Educational research*. New Delhi: PHI Learning Private Limited.
- Cuervo, J. C., and Low, S. P. (2003). “Ownership advantages/disadvantages of Singapore transnational construction corporations.” *Constr. Manage. Econ.*, 21(1), 81–94.
- Creswell, John W. (2013). “Qualitative Inquiry and Research Design,” 472. <https://doi.org/10.1017/CBO9781107415324.004>.
- Daniels, P. & Bryson, J. (2005). Sustaining business and professional services in a second city region. *Service Industries Journal*, 25(4), pp.505–524.
- Dansoh, A., (2005). Strategic planning practice of construction firms in Ghana. *Construction Management and Economics*, 23(2), pp.163–168.
- Data.worldbank.org. (2017). GDP per capita (current US\$) | Data. [Online] Available at: <http://data.worldbank.org/indicator/NY.GDP.PCAP.CD> [Accessed 25 Aug. 2017].

- Davidson, D., (1994). Building our future together. *Hosp. Health Netw.* 68, 8.
- Davidson, R. M. (2004). "Chapter Three : Research Methodology." City University of Hong Kong, 1–20. <http://www.is.cityu.edu.hk/staff/isrobert/phd/ch3.pdf>.
- De Silva, T.A. (2011), "Mixed methods: a reflection of its adoption in environmental reporting", *Qualitative Research in Accounting & Management*, Vol. 8 No. 1, pp. 91-104.
- De Wit, B. and Meyer, R., (1998). *Strategy: Process, Content. Context*, 5.
- Dess, G, Lumpkin, G. and Eisner A. (2008). *Strategic management: Texts and cases*. 4th ed. Boston: McGraw-Hill.
- DKM Economic Consultants (2012), *Annual Construction Industry Review and Outlook publication to 2012*.
- DKM Economic Consultants (2016), *Demand for Skills in Construction to 2020*
- Duncombe, J. and Jessop, J. (2002) 'Doing rapport' and the ethics of 'faking friendship'. In M. Mauthner, M. Birch, J. Jessop and T. Miller (eds) *Ethics in Qualitative Research*. London: Sage, 107–22.
- Durugbo, C. (2013). Managing industrial service co-design: identifying challenges from technology firms. *The Service Industries Journal*, 34(4), 314–334. <https://doi.org/10.1080/02642069.2013.778976>
- Drouin, N. and Jugdev, K. (2013) 'Standing on the shoulders of strategic management giants to advance organisational project management', *International Journal of Managing Projects in Business*, 7(1), pp. 61–77. doi: 10.1108/IJMPB-04-2013-0021.
- Drucker, P. F. (1993). *The Rise of the Knowledge Society*. The Wilson Quarterly Report, 17, 52-70.
- Ec.europa.eu. (2015). *Statistics on small and medium-sized enterprises - Statistics Explained*. [online] Available at: https://ec.europa.eu/eurostat/statistics-explained/index.php/Statistics_on_small_and_medium-sized_enterprises [Accessed 28 Oct. 2019].
- Egbu, C.O., (1999). Skills, knowledge and competencies for managing construction refurbishment works. *Construction Management and Economics*, 17(1), pp.29–43.
- Egbu, C., Botterill, K., (2001). Knowledge management and intellectual capital: benefits for project based industries. *Proc. RICS Found. – Constr. Build. Res. Conf.* 414–422.
- Egbu, C.O., (2004), "Managing knowledge and intellectual capital for improved organisational innovations in the construction industry: an examination of critical success factors", *Engineering, Construction and Architectural Management*, Vol. 11 Iss 5 pp. 301 – 315. <http://dx.doi.org/10.1108/09699980410558494>
- Egbu, C.O., Hari, S. & Renukappa, S.H., (2005). *Knowledge management for sustainable*

- competitiveness in small and medium surveying practices. *Structural Survey*, 23(1), pp.7–21
- Egbu, C., (2006). Knowledge production and capabilities – their importance and challenges for construction organisations in China. *Journal of Technology Management in China*, 1(3), pp.304–321.
- Eisenhardt, K.M., Martin, J.A., (2000). Dynamic capabilities: What are they? *Strateg. Manag. J.* [https://doi.org/10.1002/1097-0266\(200010/11\)21:10/11<1105::AID-SMJ133>3.0.CO;2-E](https://doi.org/10.1002/1097-0266(200010/11)21:10/11<1105::AID-SMJ133>3.0.CO;2-E)
- Elmualim, A.A. & Govender, K., (2008). Communities of Practice in UK Large Contracting Firms: Contrasting Application and Non-utilised Merits. *Architectural Engineering and Design Management*, 4(3–4), pp.149–159. Available at: <http://www.tandfonline.com/doi/abs/10.3763/aedm.2008.0073>.
- Elbanna, S., (2010). Strategic planning in the United Arab Emirates. *Int. J. Commer. Manag.* 20, 26–40. <https://doi.org/10.1108/10569211011025934>
- Enterprise Ireland, (2015). Building Information Modelling (BIM) adoption in Ireland 2016. (10), pp.1–8.
- Erickson, B.H., (1988). The relational basis of attitudes. In: Wellman, B., Berkowitz, S.D. (Eds.), *Social Structures*. Cambridge University Press, New York, pp. 99–122.
- Ehrlich, K. & Carboni, I., (2005). Inside Social Network Analysis. IBM Technical Report, pp.1–13.
- Empson, L. (2001) 'Fear of exploitation and fear of contamination: impediments to knowledge transfer in mergers between professional service firms', *Human Relations*, 54: 839-62.
- Empson, L., Muzio, D., Broschak, J.P., Bob Hinings, (2015). WHAT EXACTLY IS A PROFESSIONAL SERVICE FIRM? Researching Professional Service Firms: An Introduction and Overview, in: *Oxford Handbook of Professional Service Firms*.
- European Commission (2003) 'COMMISSION RECOMMENDATION of 6 May 2003 concerning the definition of micro, small and medium-sized enterprises', pp. 36–41.
- EuroConstruct, (2018). 81 st EUROCONSTRUCT Conference Report The Outlook for Europe Andy Cates.
- Falshaw, J. R., Glaister, K. W. and Tatoglu, E. (2006) 'Evidence on formal strategic planning and company performance', *Management Decision*, 44(1), pp. 9–30. doi: 10.1108/00251740610641436.
- Farmer, M. (2016) 'The Farmer Review of the UK Construction Labour Model: Modernise or Die', p. 80. Available at: <http://www.constructionleadershipcouncil.co.uk/news/farmerreport/>.
- Faulconbridge, J. R. and Muzio, D. (2009). 'The financialisation of large law firms: situated discourses and practices of organisation'. *Journal of Economic Geography*,

- Faulconbridge, J., (2015). Knowledge and learning in professional service firms.
- Fellows, R., Liu, A.M.M., (2013). Use and misuse of the concept of culture. *Constr. Manag. Econ.* <https://doi.org/10.1080/01446193.2013.794296>
- Flanagan, R., Lu, W., Shen, L. & Jewell, C. (2007) Competitiveness in construction: a critical review of research, *Construction Management and Economics*, 25:9, 989-1000, DOI: 10.1080/01446190701258039
- Flemming, K., (2011). Strategic leadership of architectural firms in Ireland: The role of emotion management and innovation. , (November, 2011)
- Fong, P.S.W. & Choi, S.K.Y., (2009). The processes of knowledge management in professional services firms in the construction industry: a critical assessment of both theory and practice. *Journal of Knowledge Management*, 13(2), pp.110–126.
- Forfás, (2015). Construction Sector: Outlook and Strategic Plan To 2015. , p.134. Available at: http://www.forfas.ie/media/19072013-Irelands_Construction_Sector-Publication.pdf.
- Forsythe, P., (2015). Monitoring Customer Perceived Service Quality and Satisfaction during the Construction Process. *Constr. Econ. Build.* 15, 19–42. <https://doi.org/10.5130/ajceb.v15i1.4172>.
- Freeman R.E & Gilbert D.R (1988), *Corporate Strategy and the Search for Ethics*, Prentice-Hall, Englewood Cliffs, NJ, 1988.
- Freeman, S.J., Cameron, K.S., (1993). Organisational Downsizing: A Convergence and Reorientation Framework. *Organ. Sci.* 4, 10–29. <https://doi.org/10.1287/orsc.4.1.10>
- Frechtling, J. and Sharp, L. (1997), *User-Friendly Handbook For Mixed Method Evaluations*, Diane Publishing Co., Philadelphia, PA
- Gajendran, T., Brewer, G., Runeson, G., Dainty, A., (2011). Investigating informality in construction: Philosophy, paradigm and practice. *Australas. J. Constr. Econ. Build.* 11, 84–98.
- García-Pérez, A. M. et al. (2014) ‘Strategic positioning and strategic types of small firms’, *Journal of Small Business and Enterprise Development*, 21(3), pp. 431–449. doi: 10.1108/JSBED-04-2014-0056.
- Garrigós-Simón, F. J., Marqués, D. P. and Narangajavana, Y. (2005) ‘Competitive strategies and performance in Spanish hospitality firms’, *International Journal of Contemporary Hospitality Management*, 17(1), pp. 22–38. doi: 10.1108/09596110510577653.
- George M., Apter A. J., (2004) Gaining insight into patients’ beliefs using qualitative research methodologies. *Curr Opin Allergy Clin Immunol.*4:185–9. [PubMed]
- George, B., (2016). Unravelling the Determinants of Strategic Planning Effectiveness in Public Organizations: A Strategic ... <https://doi.org/10.13140/RG.2.2.16842.36808>.

- Giles, (2013). Sun Tzu On The Art Of War, Sun Tzu On The Art Of War. <https://doi.org/10.4324/9781315030081>
- Given, L.M., (2008). The Sage Encyclopaedia of Qualitative Research Methods 1st & 2nd ed. L. M. Given & K. Saumure, eds., London: Sage Publications
- Green, Stuart D.; Larsen, Graeme D and Chung-Chin, Kao (2008) Competitive strategy revisited: contested concepts and dynamic capabilities, *Construction Management and Economics* 26(1) pp. 63-78.
- Godfrey, P. and Hill, C. W. L. (1995) ‘The problem of unobservables in strategic management research’, *Strategic Management Journal*, 16(November 1994), pp. 519–533.
- Goodwin, N., Nelson, J., and Harris, J. (2006). “Macroeconomic Measurement: Environmental and Social Dimensions.”
- Gosselin, M., (1997). The effect of strategy and organizational structure on the adoption and implementation of activity-based costing. *Accounting, Organ. Soc.* [https://doi.org/10.1016/S0361-3682\(96\)00031-1](https://doi.org/10.1016/S0361-3682(96)00031-1)
- Goretzki, L., Strauss, E. & Weber, J., (2013). An institutional perspective on the changes in management accountants’ professional role. *Management Accounting Research*, 24(1), pp.41–63.
- Gov.ie. (2019). Gov.ie - Project Ireland 2040. [online] Available at: <https://www.gov.ie/en/campaigns/09022006-project-ireland-2040/> [Accessed 20 Oct. 2019].
- Govindarajan V. (1988). A contingency approach to strategy implementation at the business- unit level: integrating administrative mechanisms with strategy. *Academic Management Journal*, 31(4), 828–53.
- Graham, B. and Thomas, K. (2006) ‘Knowledge Management in Irish Construction: the Role of CPD Accreditation’, 22nd Annual ARCOM Conference, (September), pp. 1015–1024.
- Graham, B. & Thomas, K., (2007). Lessons learned practices: Case study of a leading Irish construction organization. CME 2007 Conference - Construction Management and Economics: ‘Past, Present and Future’, pp.1657–1667.
- Graham, B., (2010). Emerging Issues in Knowledge Management for Irish Construction Organisations: A Grounded Theory Approach. Framework, (November).
- Grandori, A. (2001). ‘Neither hierarchy nor identity: knowledge-governance mechanisms and the theory of the firm’. *Journal of Management and Governance*, 5, 381–99.
- Grant, R.M. (1996), “Toward a knowledge-based theory of the firm”, *Strategic Management Journal*, Vol. 17 (Winter Special Issue), pp. 109-122.
- Grant, R. (2003). ‘Strategic planning in a turbulent environment: evidence from the oil majors’. *Strategic Management Journal*, 24, 491–517.
- Green, S. D., Larsen, G. D. and Kao, C. C.-C. (2008) ‘Competitive strategy revisited:

- contested concepts and dynamic capabilities’, *Construction Management and Economics*, 26(1), pp. 63–78. doi: 10.1080/01446190701656174.
- Grossoehme, D. H., (2014) Overview of qualitative research. *J Health Care Chaplain*. 20:109–22. [PMC free article] [PubMed].
- Grunig, J. E. and Grunig, L. A. (2000) ‘Public Relations in Strategic Management and Strategic Management of Public Relations: theory and evidence from the IABC Excellence project’, *Journalism Studies*, 1(2), pp. 303–321. doi: 10.1080/14616700050028271.
- Gruzd, A., (2010). Exploring virtual communities with the Internet Community Text Analyzer (ICTA). *Handbook of Research on Methods and Techniques for Studying Virtual Communities: Paradigms and Phenomena: Paradigms and Phenomena*, p.205.
- Gunnigan, L., (1999). *Management of Change in the Irish Construction Industry*
- Gupta, A. K. (1987). SBU strategies, corporate-SBU relations, and SBU effectiveness in strategy implementation. *Academy of Management Journal*, 30, 477–500.
- Handley, K., Sturdy, A., Fincham, R. and Clark, T. (2006) ‘Within and beyond communities of practice: Making sense of learning through participation, identity and practice’, *Journal of Management Studies*, 43(3), pp. 641–653. doi: 10.1111/j.1467-6486.2006.00605.x.
- Hillebrandt, P. M., Cannon, J. (1994) *The Modern Construction Firm*, 2nd Ed. London, Macmillan Press Ltd.
- Hillebrandt, P.M., Cannon, J. and Lansley, P. (1995) *The Construction Company in and out of Recession*, Macmillan, London.
- Hillson, D. et al. (2004) ‘Sibri.pdf’, pp. 1–11. doi: 10.1080/00140130802295572.
- Harland, C., Brenchley, R. and Walker, H. (2003) ‘Risk in supply networks’, *Journal of Purchasing and Supply Management*, 9(2), pp. 51–62. doi: 10.1016/S1478-4092(03)00004-9.
- Hartmann, T., (2011). Goal and process alignment during the implementation of decision support systems by project teams. *Journal of Construction Engineering and Management*, 137(12), pp.1134–1142. Available at: [http://ascelibrary.org/doi/abs/10.1061/\(ASCE\)CO.1943-7862.0000389](http://ascelibrary.org/doi/abs/10.1061/(ASCE)CO.1943-7862.0000389).
- Hassan Abu Bakar Mohamad Nizam Yusof Muhammad Asim Tufail Wiwied Virgiyanti (2016), "Effect of knowledge management on growth performance in construction industry", *Management Decision*, Vol. 54 Iss 3 pp. 735 – 749.
- Hax, A. C. and Majluf, N. S. (1986) ‘Strategy and the Strategy Formation Process’, *Chemistry & ...*, (August), pp. 1–21. doi: 10.1287/inte.18.3.99.
- Hecker, P. a (1996) ‘Human resources strategies for successful consulting engineering firms’, *Journal of Management in Engineering*, 12(5), pp. 32–36. doi:

10.1061/(ASCE)0742-597X(1996)12:5(32).

- Hendrick, R. (2003), 'Strategic Planning Environment, Process, and Performance in Public Agencies: A Comparative Study of Departments in Milwaukee', *Journal of Public Administration Research and Theory*, Vol. 14, No. 4, pp. 491–519.
- Hicks, R., Dattero R. and Galup, S. (2006). The five-tier knowledge management hierarchy, VOL. 10 NO. 1 2006, pp. 19-31, Q Emerald Group Publishing Limited, ISSN 1367-3270 JOURNAL OF KNOWLEDGE MANAGEMENT, PAGE 19
- Hillebrandt, P., & Lansley, S. (1995). *The construction company in and out of recession*. Basingstoke: Macmillan.
- Hitt, M. (1986) 'Corporate Distinctive Competence, Strategy, Industry and Performance', 6(May 1983), pp. 273–293.
- Hijji, K.Z. Al, (2014). Strategic Management Model for Academic Libraries. *Procedia - Social and Behavioural Sciences*, 147, pp.9–15.
- Hitchcock, G. and Hughes, D. (1995) *Research and the Teacher* (second edition). London: Routledge. Hockett,
- Hofer, C.W. & Schendel D., (1978). *Strategy Formulation: Analytical Concepts*, West Publishing, St. Paul, MN.
- Hofstede, G., Neuijen, B., Ohayv, D., & Sanders, G. (1990). Measuring organizational cultures: A qualitative and quantitative study across twenty cases. *Administrative Science Quarterly*, 35, 286–316
- Holt, G., & Goulding, J. (2014). Conceptualisation of ambiguous-mixed-methods within building and construction research. *Journal of Engineering, Design and Technology*, 12(2), 244–262. <http://doi.org/10.1108/JEDT-02-2013-0020>
- Holt, G.D. & Goulding, J.S., (2017). PROD2UCT: an outcome-oriented dissertation study model for construction engineering students. *Journal of Engineering, Design and Technology*.
- Holt, G.D., Goulding, J.S., (2017). The “ological-triad”: considerations for construction management research. *J. Eng. Des. Technol.* 15, 286–304. <https://doi.org/10.1108/JEDT-03-2016-0019>
- Hoppe, B. et al., (2010). Social network analysis and the evaluation of leadership networks. *Leadership Quarterly*, 21(4), pp.600–619.
- Housing Forum (2001) *Enemies of Promise*, Housing Forum, London.
- Hore, A.V. and West, R.P., (2005), 'The benefits of deploying IT in the material procurement in ready mix concrete in the Irish construction industry', *Concrete Research Institute Colloquium 2005*, University College Dublin, 14-15 December, 71-80.
- Hore, A. V, Thomas, K., (2011). *Advancing the Use of BIM Through a Government Funded Construction Industry Competency Centre in Ireland* 9.

- Hoskisson, R.E., Wan, W.P., Yiu, D. and Hitt, M.A., (1999). Theory and research in strategic management: Swings of a pendulum. *Journal of management*, 25(3), pp.417-456.
- Huemer, L. & Östergren, K., (2000). Strategic change and organizational learning in two 'Swedish' construction firms. *Construction Management & Economics*, 18(6), pp.635–642.
- Huff, A.S., Reger, R.K., (1987). A Review of Strategic Process Research. *J. Manage.* <https://doi.org/10.1177/014920638701300203>.
- Huovinen, P., (2006), May. Contextual Platform for Advancing the Management of Construction and Engineering Businesses: 52 Concepts Published between 1990-2005. In *Proceedings of 2nd Specialty Conference on Leadership and Management in Construction–International Perspectives*. Virginia Polytechnic Institute and State University, University of Colorado, Loughborough University, CIB. Grand Bahama Island, Bahamas (pp. 381-388).
- Hunger, D., & Wheelen, T.L., (2003). *Essentials of Strategic Management*. Third Edition ed. New Jersey: Pearson Education Inc
- Ingram D., Thompson, M., (2012) What's Your Risk Attitude? And How Does It Affect Your Company? *Harvard Business Review*. [online] Available at: <https://hbr.org/2012/06/whats-your-risk-attitude-and-h> [Accessed 28 Oct. 2019].
- Ireland, R.D. et al. (1987). Strategy Formulation Processes: Uncertainty By Managerial Level. *Strategic Management Journal*, 8(April), pp.469–485.
- Irishstatutebook.ie. (2019). Partnership Act, 1890. [online] Available at: <http://www.irishstatutebook.ie/eli/1890/act/39/enacted/en/print.html> [Accessed 15 Oct. 2019].
- Ive, G.J., Gruneberg, S.L., (2000). The Economics of the Modern Construction Sector, The Economics of the Modern Construction Sector. <https://doi.org/10.1057/9780230510913>
- Jansen, H., (2010) The logic of qualitative survey research and its position in the field of social research methods. *Forum Qual Soc Res.*;11:2.
- Jansson, H., Söderman, S., (2015). International strategic management hybrids in China. *Int. J. Emerg. Mark.* 10, 209–223. <https://doi.org/10.1108/IJOEM-07-2013-0114>
- Jarzabkowski, P., (2003). Strategy as Practice: Recursiveness, Adaptation, and Practices-in-Use. , pp.529–560.
- Jarzabkowski, P., (2005). Strategy as practice. An Act. Approach.
- Jarzabkowski, P., Balogun, J. & Seidl, D. (2007) 'Strategizing: the challenges of a practice perspective', *Human Relations* 60(1), 5e27 (2007).
- Jarzabkowski, P. & Spee, A.P., (2009). Strategy-as-practice: A Review and Future Directions for the Field. *International Journal of Management Reviews*, 11(1), pp.69–95.

- Jashapara, A. (2004); Knowledge Management: An Integrated Approach, Essex: Pearson Education
- Jennings, Martin J. and Betts, Martin (1996) Competitive strategy for quantity surveying practices: the importance of information technology, *Journal of Engineering, Construction and Architectural Management* 3(3) pp. 163-186.
- Jewell, C., Flanagan, R. and Anac, C. (2010) ‘Understanding UK construction professional services exports: definitions and characteristics’, *Construction Management and Economics*, 28(March), pp. 231–239. doi: 10.1080/01446191003587729.
- Jewell, C. A. (2011). “A typology of construction professional services firms—A consulting engineering perspective.” Ph.D. thesis, Univ. of Reading, West Berkshire, U.K.
- Jogulu, U.D. and Pansiri, J. (2011), “Mixed methods: a research design for management doctoral students”, *Management Research Review*, Vol. 34 No. 6, pp. 687-701.
- Johanson, J., & Vahlne, J. (2009). The Uppsala internationalization process model revisited: From liability of foreignness to liability of outsidership. *Journal of International Business Studies*, 40, 1411–1431.
- Johnsen, Å. (2015). Strategic management thinking and practice in the public sector: A strategic planning for all seasons? *Financial Accountability and Management*, 31(3), pp.243–268.
- Johnson, G., Melin, L., & Whittington, R. (2003). Micro strategy and strategizing: Towards an activity-based view. *Journal of Management Studies*, 40 (1), 3-22.
- Johnson, G., Langley, A., Melin, L., & Whittington, R. (2007). *Strategy as Practice: Research Directions and Resources*. Cambridge, UK: Cambridge University Press.
- Johnson, G., Scholes, K. and Whittington, R., (2012). *Fundamentals of Strategy*. ed. Harlow: Pearson.
- Jonsson H. & Rudberg M., (2014) Classification of production systems for industrialized building: a production strategy perspective, *Construction Management and Economics*, 32:1-2, 53-69, DOI: 10.1080/01446193.2013.812226.
- Junnonen, J.M., (1998). Strategy formation in construction firms. *Eng. Constr. Archit. Manag.* <https://doi.org/10.1108/eb021065>
- Kald, M., Nilsson, F. & Rapp, B., (2000). On strategy and management control: The importance of classifying the strategy of the business. *British Journal of Management*, 11, pp.197–212.
- Kale, S., and Arditi, D. (2002). “Competitive positioning in united states construction industry.” *J. Constr. Eng. Manage.*, 128-3-, 238–247.
- Kalkan, A., Bozkurt, Ö.Ç., (2013). The Choice and Use of Strategic Planning Tools and Techniques in Turkish SMEs According to Attitudes of Executives. *Procedia - Soc. Behav. Sci.* 99, 1016–1025. <https://doi.org/10.1016/j.sbspro.2013.10.575>.

- Kaluarachchi, Y.D. & Jones, K., (2007). Monitoring of a strategic partnering process: The Amphion experience. *Construction Management and Economics*, 25(10), pp.1053–1061.
- Kaka, A. and Price, A.D.F. (1991) Relationship between value and duration of construction projects. *Construction Management and Economics*, 9(4), 383-400.
- Kanjanabootra, S. & Corbitt, B., (2016). Reproducing knowledge in construction expertise: a reflexive theory, critical approach. *Construction Management and Economics*, 6193(March), pp.1–17. Available at: <http://www.tandfonline.com/doi/full/10.1080/01446193.2016.1151064>
- Karuhanga, B.N., (2015). Evaluating implementation of strategic performance management practices in universities in Uganda. *Measuring Business Excellence*, 19(2), pp.42–56.
- Kehily, D., (2016). Leveraging Building Information Modelling To Address the Barriers That Prevent the Widespread Adoption of Life Cycle Costing By Quantity Surveyors.
- Kelley, K., Clark, B., Brown, V., Sitzia, J., 2003. Good practice in the conduct and reporting of survey research. *Int. J. Qual. Heal. Care* 15, 261–266. <https://doi.org/10.1093/intqhc/mzg031>
- Kellogg, D.L., Nie, W., (1995). A framework for strategic service management. *Journal of Operations Management* 13, 323–337.
- Kelly, A., (2013). Strategic Management through the downturn - a case study of an Irish Construction Contractor B. Sc. in Construction Economics and Management Degree School of Real Estate and Construction Economics, Technological University Dublin, April, 2013.
- Kelley, K., Clark, B., Brown, V., Sitzia, J., 2003. Good practice in the conduct and reporting of survey research. *Int. J. Qual. Heal. Care* 15, 261–266. <https://doi.org/10.1093/intqhc/mzg031>
- Koch C., Sage D., Dainty A. & Simonsen R. (2015). Understanding operations strategizing in project-based organisations: middle managers' interaction and strategy praxis. *Engineering Project management*
- Koleoso, H., Omirin, M., Adewunmi, Y., Babawale. G. (2013). Applicability of existing performance evaluation tools and concepts to the Nigerian facilities management practice. *International Journal of Strategic Property Management* 17:4, 361-376.
- Lai, K. K., Wang, M., & Liang, L. (2007). A stochastic approach to professional services firms' revenue optimization. *European Journal of Operational Research*, 182(3), 971–982. <https://doi.org/10.1016/j.ejor.2006.09.038>
- Landaeta, R.E., Viscardi, S. & Tolk, A., (2011). Strategic management of scrum projects: An organizational learning perspective. *Proceedings of the 1st International Technology Management Conference, ITMC 2011*, pp.651–656.
- Langdon D. C., (2003). Business Case for An Applied Construction Innovation Centre.

Options.

- Langley, a., and C. Abdallah. (2011). "Templates and Turns in Qualitative Studies of Strategy and Management." *Research Methodology in Strategy and Management* 6 (2011):201–35. <https://doi.org/10.1108/S1479-8387>.
- Laudon, K. C. & P. L. Laudon, (1998). *Management Information Systems*, Fourth edition, Prentice-Hall, New Jersey, USA.
- Lebedev, S. et al. (2014) 'Mergers and acquisitions in and out of emerging economies', *Journal of World Business*. Elsevier Inc., 50(4), pp. 651–662. doi: 10.1016/j.jwb.2014.09.003.
- Lei, G. & Xin, G., (2011). Social network analysis on knowledge sharing of. *Journal of System and Management Sciences*, 1(3), pp.79–89.
- Leitner, K.H. & Gu'ldenberg, S., (2010). Generic strategies and firm performance in SMEs: A longitudinal study of Austrian SMEs. *Small Business Economics*, 35(2), pp.169–189.
- Lenz, R. T. (1980) 'Strategic capability: A concept and framework for analysis', *Academy of Management Review*, 5, 1980, pp. 225-234.
- Lester, E. I. A. (2017) 'Building Information Modelling (BIM)', *Project Management, Planning and Control*, (May), pp. 509–527. doi: 10.1016/B978-0-08-102020-3.00052-8.
- Lewis, M.A. & Brown, A.D., (2012). How different is professional service operations management? *Journal of Operations Management*, 30(1–2), pp.1–11.
- Li, S. and Ling, F.Y.Y. (2012), "Critical strategies for Chinese architectural, engineering and construction firms to achieve profitability", *Engineering, Construction and Architectural Management*, Vol. 19 No. 5, pp. 495-511.
- Ling, F.Y.Y., William Ibbs, C., Cuervo, J.C., (2005). Entry and business strategies used by international architectural, engineering and construction firms in China. *Constr. Manag. Econ.* 23, 509–520. <https://doi.org/10.1080/01446190500040141>.
- Ling, F.Y.Y., Ke, Y., Kumaraswamy, M.M., Asce, M., Wang, S., (2013). Key Relational Contracting Practices Affecting Performance of Public Construction Projects in China. *J. Constr. Eng. Manag.* 142, 1–12. [https://doi.org/10.1061/\(ASCE\)CO.1943-7862](https://doi.org/10.1061/(ASCE)CO.1943-7862)
- Lim, J.N. & Ofori, G., (2007). Classification of innovation for strategic decision making in construction businesses. *Construction Management and Economics*, 25(9), pp.963–978.
- Linesight.com. (2019). [online] Available at: <https://www.linesight.com/knowledge-center/> [Accessed 20 Oct. 2019].
- Lindzey, G. and Aronsson, E. (1985) (eds.) *Handbook of Social Psychology: Group Psychology and the Phenomena of Interaction* (3rd Ed.) Lawrence Erlbaum Ass.
- Liu, W., Lepak, D.P., Takeuchi, R., Sims, H.P., 2003. Matching leadership styles with

- employment modes: Strategic human resource management perspective. *Hum. Resour. Manag. Rev.* 13, 127–152. [https://doi.org/10.1016/S1053-4822\(02\)00102-X](https://doi.org/10.1016/S1053-4822(02)00102-X)
- Liu, A., (2012). Corporate Strategy in Construction: Understanding Today's Theory and Practice. *Constr. Manag. Econ.* 30, 93–95. <https://doi.org/10.1080/01446193.2011.648946>
- Liu, H. and Roos, L.-U. (2006) 'Managing strategic planning paradigms in China', *Marketing Intelligence & Planning*, 24(5), pp. 432–445. doi: 10.1108/02634500610682845.
- Love, P., Edwards, D., Love, J. and Irani, Z. (2011) Champions of practice: context and habitus for unbounded learning in construction projects. *Facilities*, 29(5/6), 193–208.
- Løwendahl, B. (2000). Strategic management of professional service firms. Copenhagen: Copenhagen Business School Press
- Løwendahl, B.L. (2000). The globalization of professional business service firms. Fad or genuine source of competitive advantage. In B.R. Løwendahl, Y. Aharoni, & L. Nachum (Eds.), *Globalization of services: Some implications for theory and practice* (pp. 142–196). London: Routledge.
- Løwendahl, B. (2005). Strategic management of professional service firms. [Copenhagen]: Copenhagen Business School Press.
- Løwendahl, B.R., (2007). The Strategies and Management of Professional Service Firms (Presentation). Department of Strategy and Logistics, BI Norwegian School of Management.
- Löwstedt, M., (2015). Strategizing in construction: Exploring practices and paradoxes. , (MAY) 2015.
- Löwstedt, M.; Räisänen, C.; Stenberg, A. (2011) "Strategy work in a large construction company: personified strategies as drivers for change". 6th Nordic conference on Construction Economics and Organisation, 13-15 April 2011, Copenhagen, Denmark.
- Lu, S. L., and Sexton, M. (2006). "Innovation in small construction knowledge-intensive professional service firms: A case study of an architectural practice." *Constr. Manage. Econ.*, 24(12), 1269–1282.
- Luqman, O. (2014) Modeling performance differentials in large construction organisations in South Africa, PhD Thesis, University of Cape Town, South Africa.
- Luo, Y., Sun, J., Wang, S.L., (2011). Comparative strategic management: An emergent field in international management. *J. Int. Manag.* 17, 190–200. <https://doi.org/10.1016/j.intman.2011.05.002>
- Macmillan, H. & Tampoe, M., (2000). Strategic Management, Process, Content and Implementation. Great Britain: Oxford University Press.

- Maister, D.H. (1993). *Managing the professional service firm*. New York: The Free Press.
- Maister, David H. (2003) *Managing the Professional Service Firm*, London: Simon & Schuster.
- Makhija, M. (2003). Comparing the Resource-Based and Market-Based Views of the Firm: Empirical Evidence from Czech Privatization. *Strategic Management Journal*, 24(5), 433-451. Retrieved from <http://www.jstor.org/stable/20060545>.
- Manfreda, K.L. and Vehovar, V. (2008). Internet Surveys. In E.D. de Leeuw, J.J. Hox and D.A. Dillman (eds.) *International Handbook of Survey Methodology*. New York: Lawrence Erlbaum Associates, 264-284
- Marsden, P.V., (2005). Recent developments in network measurement. *Models and methods in social network analysis*, 8, p.30. McLaughlin, C.P., Pannesi, R.T. & Kathuria, N., 1991. The Different Operations Strategy Planning Process for Service Operations. *International Journal of Operations & Production Management*, 11(3), pp.63–76.
- Mayer, J. and Filstead, W. (1979). The Adolescent Alcohol Involvement Scale. An instrument for measuring adolescents' use and misuse of alcohol. *Journal of Studies on Alcohol*, 40(3), pp.291-300.
- McKinsey Global Institute (2015) 'A Window of Opportunity for Europe', (June), pp. 2–3.
- Mcmanus, C., Murphy, M., (2016). Education for Sustainable Development- The Irish Construction Sector and the Need for a Sustainable Approach.
- McManus, P., Mulhall, S., Ragab, M. A. F., & Arisha, A. (2017). An Investigation in the Methodological Approaches used in Doctoral Business Research in Ireland. *ECRM 2017: 16th European Conference on Research Methodology for Business and Management Studies*, (June).
- McMillan, E. (2004), *Complexity, Organizations and Change*, Routledge, London. MacKay.
- McMillan, K., Weyers, J., (2014). How to complete a successful research project, *Smarter study skills*.
- Mcquillan, D. (2013) 'the Internationalization of Creative Professional Service Firms The Internationalization of Creative Professional Service Firms', 12(December). doi: 10.21427/D7V31C.
- Mertens, D.M., 2007. Transformative Paradigm: Mixed Methods and Social Justice. *J. Mix. Methods Res.* 1, 212–225. <https://doi.org/10.1177/1558689807302811>.
- Mertens, D.M., 2010. Transformative mixed methods research. *Qual. Inq.* 16, 469–474. <https://doi.org/10.1177/1077800410364612>
- Miles, R. H., and Cameron, K. S. (1982). *Coffin nails and corporate strategy*, Prentice-Hall, Englewood Cliffs, NJ.
- Miles, R. E., and Snow, C. C. (1978). *Organizational strategy, structure and process*,

McGraw-Hill, New York, NY.

- Miles M. B, Huberman A.M., (1994) Newbury Park; London: Sage;. *Qualitative Data Analysis: An Expanded Sourcebook*.
- Miller D. (1988). Relating Porter's business strategies to environment and structure: analysis and performance implications. *Academic of Management Journal*, 31(2), 280–308.
- Mintzberg, H. and Waters, J.A. (1985), “Of strategies, deliberate and emergent”, *Strategic Management Journal*, Vol. 6 No. 3, pp. 257-272.
- Mintzberg, H., (1987). *The Strategy Concept I: Five Ps For Strategy*. *Calif. Manage. Rev.* <https://doi.org/10.2307/41165263>
- Mohd Zin, I.N. & Egbu, C.O., (2009). A review of literature on knowledge management strategy - lessons lea, Available at: <http://usir.salford.ac.uk/2810/%5Cnhttp://usir.salford.ac.uk/2810/1/Proceedings-IPGRC09.pdf>.
- Monge, P. R. & Contractor, N. S. (2003). *Theories of communication networks*, New York, Oxford University Press.
- Moutos, T., (2014). Comment on “Ireland’s Economic Crisis: The Good, the Bad and the Ugly.” *Journal of Macroeconomics*, 39(PB), pp.441–443.
- Murphy, R., (2011). *Strategic Planning in Irish Quantity Surveying Practices*. Doctor of Business Administration Dissertation. Heriot-Watt University Edinburgh Business School, (January).
- Murphy, R (2013) *Strategic Management in Construction Professional Service Firms: A student of Irish QS Practices Construction Management and Economics*, Vol. 31, No. 2, 151–166.
- Murphy, R., (2016). *Construction Professional Service Firm Management: a Longitudinal Study of Strategic Planning in Irish Quantity Surveying Practices*.
- Murphy, R., (2018). *Employment Opportunities and Future Skills Requirements for Surveying Professionals* 1–85.
- Naaranoja, M., Haapalainen, P. & Lonka, H., (2007). Strategic management tools in projects case construction project. *International Journal of Project Management*, 25(7), pp.659–665. <https://doi.org/10.1016/j.ijproman.2007.04.002>.
- Navarro Sada, A., Maldonado, A., 2007. *Research Methods in Education*. Sixth Edition - by Louis Cohen, Lawrence Manion and Keith Morrison. *Br. J. Educ. Stud.* 55, 469–470. https://doi.org/10.1111/j.1467-8527.2007.00388_4.x
- Newcombe, R., Langford, D. & Fellows, R., (1990). *Construction Management 1, Organisation Systems*. London: The Mitchell Publishing Company Limited.
- Nohria, N. and Eccles, R. (1992). *Networks and organizations*. 1st ed. Boston, Mass.: Harvard Business School Press.

- Nuntamanop, P., Kauranen, I., Igel, B., (2013). A new model of strategic thinking competency. *J. Strateg. Manag.* 6, 242–264. <https://doi.org/10.1108/JSMA-10-2012-0052>
- O'Connor, L., (2016). Meeting the Skills Needs of a Buoyant Economy: Apprenticeship-The Irish Experience. *Journal of Vocational Education and Training*, 58(1), pp.31–46.
- O'Malley, E. & Van Egeraat, C., (2000). Industry clusters and Irish indigenous manufacturing: Limits of the Porter view. *Economic and Social Review*, 31(1), pp.55–79.
- Ocasio, W., Joseph, J., (2008). Rise and Fall - or Transformation?. The Evolution of Strategic Planning at the General Electric Company, 1940-2006. *Long Range Plann.* 41, 248–272. <https://doi.org/10.1016/j.lrp.2008.02.010>.
- Okumus, Fevzi, Levent Altinay, and Angela Roper. (2007). “Gaining Access for Research. Reflections from Experience.” *Annals of Tourism Research* 34 (1):7–26. <https://doi.org/10.1016/j.annals.2006.07.006>.
- Oluwatayo, A.A., Amole, D. & Uwakonye, O., (2016). Organisational life cycle, business orientation and performances of architectural firms in Nigeria. , 16(1), pp.50–63.
- Olsen, B. (2008). How reasons for entry into the profession illuminate teacher identity development. *Teacher Education Quarterly*, 35(3).
- O'Regan, N., Ghobadian, A., (2002). Formal strategic planning. *Bus. Process Manag. J.* 8, 416–429. <https://doi.org/10.1108/14637150210449102>.
- Owusu-Manu, D.-G., Edwards, D.J., Kutin-Mensah, E.K., Kilby, A., Parn, E., Love, P.E., 2017. The impact of socio-political and economic environments on private sector participation in energy infrastructure delivery in Ghana. *J. Eng. Des. Technol.* 15, 166–180. <https://doi.org/10.1108/JEDT-02-2016-0007>
- Oyewobi, L.O., (2014). Modeling Performance Differentials in Large Construction Organisations in South Africa 1–332.
- Oyewobi, L.O., Windapo, A.O. & Rotimi, J.O.B., (2015). Measuring strategic performance in construction companies: a proposed integrated model. *Journal of Facilities Management*, 13(2), p.109.
- Pamulu, M.S., (2010). Strategic Management Practices in the Construction Industry: a Study of Indonesian Enterprises. , (July), pp.1–221.
- Papke-Shields, Karen E; Malhotra, Manoj K. and Grover, Varun (2006) Evolution in the strategic manufacturing planning process of organisations, *Journal of Operations*.
- Parker, D. W. et al. (2014) ‘International Journal of Managing Projects in Business Inclusion of strategic management theories to project management “Improving performance in project-based management: synthesizing strategic theories”’, *International Journal of Managing Projects in Business Iss International Journal of Productivity and Performance Management International Journal of Managing Projects in Business Iss*, 8(4), pp. 552–573.

- Parnell, J. A., Long, Z. and Lester, D. (2015) Competitive strategy, capabilities and uncertainty in small and medium sized enterprises (SMEs) in China and the United States, *Management Decision*. doi: 10.1108/MD-04-2014-0222.
- Pekuri, A., Pekuri, L. & Haapasalo, H., (2015). Business models and project selection in construction companies. *Construction Innovation*, 15(2), p.180.
- Penrose, E.T, (1959) *The Theory of the Growth of the Firm*. John Wiley and Sons, New York. 1959.
- Pettigrew, A.M., (1985). Contextualist Research: A Natural Way to Link Theory and Practice, in: *Doing Research That Is Useful for Theory and Practice*.
- Phua, F.T.T., (2006). Predicting construction firm performance: An empirical assessment of the differential impact between industry- and firm-specific factors. *Constr. Manag. Econ*. <https://doi.org/10.1080/01446190500435127>
- Pierce, I. A., and Robinson, R. B. (1991). *Strategic management*. Irwin, III.
- Piercy, N. et al. (2011) ‘Marketing management, market strategy and strategic management: domain realignment and redefinition’, *Journal of Strategic Marketing*, 4488(June 2013), pp. 37–41. doi: 10.1080/096525497346866.
- Poister, T.H. and G. Streib (2005), ‘Elements of Strategic Planning and Management in Municipal Government: Status after Two Decades’, *Public Administration Review*, Vol. 65, No. 11, pp. 45– 56.
- Porter, M., (1979). How Competitive Forces Shape Strategy. *Harvard business Review*, 57(2), pp.137–145. Available at: <http://faculty.bcitbusiness.org/kevinw/4800/porter79.pdf>.
- Porter, M.E. (1980), *Competitive Strategy*, Free Press, New York, NY.
- Porter, M. E. (1996). What is strategy? *Harvard Business Review*, November-December, 61-78. Rentsch.
- Porter, M.E., (1998). *Competitive Strategy: techniques for analysing industries and competitors*. New York: Free Press.
- Porter, M.E. (2008), “The five competitive forces that shape strategy”, *Harvard Business Review*, Vol. 86 No. 1, pp. 25-40.
- Prahalad, C.K., Hamel, G., (1994). Strategy as a field of study: Why search for a new paradigm? *Strateg. Manag. J*. <https://doi.org/10.1002/smj.4250151002>
- Preece, C.N., Mat Isa, C.M., Saman, H.M., Che Ibrahim, C.K., (2016). Development of entry location, entry timing and entry mode decision model for construction firms in international markets. *Constr. Manag. Econ*. 34, 236–257. <https://doi.org/10.1080/01446193.2015.1084429>.
- Price, a. D.F. & Newson, E., (2003). Strategic Management: Consideration of Paradoxes, Processes, and Associated Concepts as Applied to Construction. *Journal of Management in Engineering*, 19(4), pp.183–192.

- Project Ireland, (2018). National Development Plan, last viewed on September 30th, 2019, <https://www.gov.ie/en/policy-information/07e507-national-development-plan-2018-2027/>
- Proverbs, D.G. & Faniran, O.O. (2001). International construction performance comparisons: a study of 'European' and Australian contractors. *Engineering, Construction and Architectural Management*, 8, 284–91.
- Pryke, S., (2012). *Social network analysis in construction*. John Wiley & Sons.
- Pryke, S.D., Zagkli, G. & Kougia, I., (2011). Resource provision ego-networks in small Greek construction firms. *Building Research & Information*, 39(February 2015), pp.616–636.
- Pryke, S., Badi, S. & Bygballe, L., (2017). Editorial for the special issue on social networks in construction. *Construction Management and Economics*, 35(8–9), pp.445–454. Available at: <https://www.tandfonline.com/doi/full/10.1080/01446193.2017.1341052>.
- Raelin, J.A. and Cooleage, A.S., (1995). From generic to organic competencies. *People and Strategy*, 18(3), p.24.
- Ragab, Mohamed A F (2015). “The MinK Framework: An Integrated Framework to Assess Individual Knowledge in Organisational Context”. Doctor of Philosophy (Ph . D .) Thesis, 3S Group, College of Business, Technological University Dublin.
- Ramsay, W. (1989) Business objectives and strategy. In: *The Management of Construction Firms: Aspects of Theory* (eds P.M. Hillebrandt & J. Cannon), pp. 9-29. Macmillan. London.
- Razmdoost, K. and Mills, G. (2016) ‘Towards a service-led relationship in project-based firms.’, *Construction Management & Economics*, 34(4/5), p. 317. doi: 10.1080/01446193.2016.1200106.
- Redmond, A, Hore, A., West R., (2010), *Cloud Computing and its Application in the Irish Construction Industry*, AEC-2010, 6th International Conference on Innovation in Architecture, Engineering and Construction, Penn State University, Pennsylvania, USA (AEC 2010) June 9, 2010.
- Reynolds, J. M., Loraine B., Christina H., and Malcolm T.. (2010). “How to Research.” *Open UP Study Skills* 25 (3):xii, 315 . <https://doi.org/10.2307/1319404>.
- Rhian, S., Fitzgerald, L., Johnston, R., & Voss, C. (1992). Towards a classification of service processes. *International Journal of Service Industry Management*, 3(3), 62–75.
- Ring, P.S. and J.L. Perry (1985), ‘Strategic Management in Public and Private Organizations: Implications of Distinctive Contexts and Constraints’, *The Academy of Management Review*, Vol. 10, No. 2, pp. 276–86
- Roberts, A. and Wallace, W. (2004) ‘Project Management’, 2008(1006), p. 775.
- Robinson, H.S. et al. (2005). Knowledge management practices in large construction

- organisations. *Engineering, Construction and Architectural Management*, 12(5), pp.431–445.
- Robinson, H.S., Carrillo, P.M., Anumba, C.J., A-Ghassani, a M., (2005). Review and implementation of performance management models in construction engineering organizations. *Constr. Innov. Inf. Process Manag.* 5, 203–217. <https://doi.org/10.1108/14714170510815258>.
- Robson, C. (1993). *Real World Research*. Oxford: Blackwells.
- Rodgers B. L., Cowles K. V., (1993) The qualitative research audit trail: A complex collection of documentation. *Res Nurs Health*. 16:219–26. [PubMed].
- Rooney, A. (2009) ‘Creativity and Structure in Irish Architectural Practices: an Exploration of the Symbiotic Relationship between Structure and Creativity in Irish Architectural Practices with International Offices Creativity and Structure in Irish Architectural Practices’.
- Rouleau, L., (2013). Strategy-as-practice research at a crossroads. *Management (France)*, 16(5), pp.547–565.
- Rouleau, L., (2015). Studying strategizing through biographical methods: narratives of practices and life trajectories of practitioners. *Cambridge Handbook of Strategy as Practice*, pp.462-76.
- Rosenthal, R., 1979. The file drawer problem and tolerance for null results. *Psychological bulletin*, 86(3), p.638.
- Ruan X., Ocheing E.G., Price D.F. and Egbu C.O, (2012). Knowledge integration process in construction projects: a social network analysis approach to compare competitive and collaborative working. *Construction Management and Economics*, 30(1), pp.5–19.
- Rumelt, R., Schendel, D., Teece, D., (1994). *Fundamental Issues in Strategy*, Boston, MA.
- Sage, D., Dainty, A., & Brookes, N. (2012). A Strategy-as-Practice exploration of lean construction strategizing. *Building Research and Information*, 40(2), 221–230. <http://doi.org/10.1080/09613218.2012.655925>.
- Sahay, A., (2016). Peeling Saunder's Research Onion. *Research Gate, Art*, pp.1-5.
- Salkind, N., (2010). *Encyclopaedia of Research Design*. <https://doi.org/10.4135/9781412961288>
- Salunke, S., Weerawardena, J. & McColl-Kennedy, J.R., (2011). Towards a model of dynamic capabilities in innovation-based competitive strategy: Insights from project-oriented service firms. *Industrial Marketing Management*, 40(8), pp.1251–1263.
- Sambasivan M., Deepak, T.J., Salim, A.N., Ponniah , V. (2017)," Analysis of delays in Tanzanian construction industry Transaction cost economics (TCE) and structural equation modeling (SEM) approach ", *Engineering, Construction and Architectural*

Management, Vol. 24 Iss 2 pp. 308 - 325 Permanent link to this document:
<http://dx.doi.org/10.1108/ECAM-09-2015-0145>

- Saunders, B.M., Tosey, P. (2009). Research Onion. [online] onion.derby.ac.uk. Available at: <https://onion.derby.ac.uk/> [Last Accessed 9 August. 2019].
- Saunders, B.M., Tosey, P., (2012). The Layers of Research Design. *Rapp. Mag. NLP Prof.* [https://doi.org/08 jun 2015](https://doi.org/08jun2015)
- Saunders MNK (2012) Web versus Mail: The Influence of Survey Distribution Mode on Employees' Response. *Field Methods* 24.1.
- Schilling, A., Werr, A., Gand, S., Sardas, J.C., (2012). Understanding professionals' reactions to strategic change: The role of threatened professional identities. *Serv. Ind. J.* <https://doi.org/10.1080/02642069.2010.531269>
- Scott-Kennel, J. & von Batenburg, Z., (2012). The role of knowledge and learning in the internationalisation of professional service firms. *Service Industries Journal*, 32(10), pp.1667–1690.
- Scott, A. (2009) 'Strategic Planning', 2009(1007).
- Seaden, G. et al. (2003) 'Strategic decisions and innovation in construction firms', *Construction Management and Economics*, 21(6), pp. 603–612. doi: 10.1080/0144619032000134138.
- Seibert, S. E., Wang, G. & Courtright, S. H. (2011). Antecedents and Consequences of Psychological and Team Empowerment in Organizations: A Meta-Analytic Review. *Journal of Applied Psychology*, 96, 981-1003.
- Seriki, H.T., (2007). Team-Level Innovative Performance in Sub-Saharan Africa. *Teamwork for Innovation in Sub-Saharan Africa*, pp.35-71.
- Seriki, O.O. and Murphy, R., (2019). Competitive Strategies In Small And Medium Sized Enterprises (Sme's): A Cross-Case Analysis Of Irish Construction Professional Service Firms.
- Sha, K., (2011). Vertical governance of construction projects: an information cost perspective. *Constr. Manag. Econ.* 29, 1137–1147. <https://doi.org/10.1080/01446193.2011.637939>
- Shan Li Florence Y.Y. Ling, (2012),"Critical strategies for Chinese architectural, engineering and construction firms to achieve profitability", *Engineering, Construction and Architectural Management*, Vol. 19 Iss 5 pp. 495 – 511.
- Sherman, H., Rowley, D. J. and Armandi, B. R. (2007) 'Developing a strategic profile: the pre-planning phase of strategic management', *Business Strategy Series*, 8(3), pp. 162–171. doi: 10.1108/17515630710684150.
- Shostack, G.L. (1977) Breaking free from product marketing, *Journal of Marketing*, 41(2), 73-83.
- Singh, S.K., Watson, H.J. & Watson, R.T., (2002). EIS support for the strategic management process. *Decision Support Systems*, 33(1), pp.71–85.

- Singh, A., (2018). *Research Methods In Psychology and Psychological Research*.
- Skitmore, M. and Pemberton, J. (1994) A multivariate approach to construction contract bidding mark-up strategies. *Journal of the Operational Research Society*, 45(11), 1263–72.
- Sminia, H., (2009). Process research in strategy formation: Theory, methodology and relevance. *Int. J. Manag. Rev.* 11, 97–125. <https://doi.org/10.1111/j.1468-2370.2008.00253.x>
- Spanos, Y.E., Zaralis, G. and Lioukas, S. (2004), “Strategy and industry effects on profitability: evidence from Greece”, *Strategic Management Journal*, Vol. 25 No. 1, pp. 139-65.
- Speed, R. (1993) ‘Maximizing the Potential of Strategic Typologies for Marketing Strategy Research’, *Journal of Strategic Marketing*, 1(3), p. 171. doi: 10.1080/09652549300000011.
- Spillane, J.P. et al. (2011). Challenges Of UK/Irish Contractors Regarding Material Management and Logistics in Confined Site Construction. *International Journal of Construction Supply Chain Management*, 1(1), pp.25–42.
- Soetanto, R., Goodier, C. I., Austin, S. A., Dainty, A. R.J. and Price, A. D.F. (2007). Enhancing strategic planning in the UK construction industry. IN: Burt, G. (ed.). *Proceedings of 3rd International Conference on Organizational Foresight: Learning the Future Faster: University of Strathclyde, Glasgow, 16th August 2007*.
- Solas.ie. (2019). [online] Available at: <http://www.solas.ie/SkillsToAdvance/Documents/National%20Skills%20Bulletin%202018.pdf> [Accessed 20 Oct. 2019].
- Sonntag, V. (2003). The role of manufacturing strategy in adapting to technological change. *Integrated Mfg. Systems*, 14(4), pp.312-323.
- Soosay, C., Nunes, B., Bennett, D.J., Sohal, A., Jabar, J. Winroth, M. (2016), "Strategies for sustaining manufacturing competitiveness: comparative case studies in Australia and Sweden", *Journal of Manufacturing Technology Management* , Vol. 27 Iss 1 pp. <http://dx.doi.org/10.1108/JMTM-04-2014-0043>.
- Stewart, V. (2000), “Understanding George Kelly and Personal Construct Theory”, *Enquire Within, New Zealand*, available at: www.enquirewithin.co.nz/HINTS/skills2.htm (accessed 12 March 2004)
- Stewart, R.A. & Spencer, C.A., (2006). Six-sigma as a strategy for process improvement on construction projects: a case study. *Construction Management & Economics*, 24(4), pp.339–348.
- Stonehouse, G., Pemberton, J., (2002). Strategic planning in SMEs – some empirical findings. *Manag. Decis.* <https://doi.org/10.1108/00251740210441072>
- Stuart D. G. , Chris H., Abbas Ali E. , Graeme D. L. & Chung Chin K.(2008) On the discourse of construction competitiveness, *Building Research & Information*, 36:5, 426-435, DOI: 10.1080/09613210802076666

- Subedi, D. (2016). Explanatory Sequential Mixed Method Design as the Third Research Community of Knowledge Claim. *American Journal of Educational Research*, 4(7), 570-577.
- Sundararajan, B. (2010) "Emergence of the Most Knowledgeable Other (MKO): Social Network Analysis of Chat and Bulletin Board Conversations in a CSCL System" *Electronic Journal of e-Learning* Volume 8 Issue 2 2010, (pp191 - 208).
- Swarts, K. M., Lehman, K. and Lewis, G. K. (2016) 'The use of social customer relationship management by building contractors: evidence from Tasmania', *Construction Management and Economics*, 6193(December), pp. 1–15. doi: 10.1080/01446193.2015.1133919.
- Tait, P. & Loosemore, M., (2012). The corporate governance of Australian listed construction companies. *The Australasian Journal of Construction Economics and Building*, 9(2), pp.7–16.
- Tan, Y., Shen, L. & Langston, C., (2012). Competition Environment, Strategy, and Performance in the Hong Kong Construction Industry. *Journal of Construction Engineering and Management-Asce*, 138(3), pp.352–360.
- Tansey, P., Spillane, J.P. & Meng, X., (2014). Linking response strategies adopted by construction firms during the 2007 economic recession to Porter's generic strategies. *Construction Management and Economics*, 32(February 2015), pp.705–724.
- Tansey, P. (2018) *Turnaround Strategies of Irish Construction Contractors during the period 2007 – 2015*, PhD, Queens University, Belfast.
- Tansey, P., Meng, X. and Cleland, D. (2013) A critical review of response strategies adopted by construction companies during an economic recession, in Smith, S.D. and Ahiaga-Dagbui, D.D. (eds) *Proceedings 29th Annual ARCOM Conference*, 2–4 September, Reading, UK, pp. 679–89.
- Tansey, P & Spillane, J. (2016), *From Crisis to Opportunity: Turnaround Strategies of Large Irish Construction Contractors during the Period 2007-2015*. in *Proceedings of the 32nd ARCOM Annual Conference, 2016*. ARCOM, pp. 269-278, 32nd ARCOM Annual Conference, 2016, Manchester, United Kingdom, 5-7 September.
- Tansey, P., Spillane, J.P. and Brooks, T. (2017). "Creating Opportunities in the Face of an Environmental Jolt: Exploring Turnaround Strategizing Practices within Large Irish Construction Contractors." *Construction Management and Economics* 6193 (September). Routledge:1–25. <https://doi.org/10.1080/01446193.2017.1368679>.
- Tansey, P., Spillane, J., (2018). *Vistas of strategy-making within Northern Ireland construction firms: How SME's differ from large firms*, in: *Proceeding of the 34th Annual ARCOM Conference, ARCOM 2018*.
- Teece, D.J., Rumelt, R., Dosi, G., Winter, S., (1994). Understanding corporate coherence. Theory and evidence. *J. Econ. Behav. Organ.* [https://doi.org/10.1016/0167-2681\(94\)90094-9](https://doi.org/10.1016/0167-2681(94)90094-9)

- Teece, D., (2007). Explicating dynamic capabilities: the nature and micro foundations of (sustainable) enterprise performance. *Strategic Management Journal* 28, 1319–1350.
- Teece, David J. (2010) *Business Models, Business Strategy and Innovation*, *Long Range Planning*, 43(2/3); pp. 172-194.
- The Irish Times. (2018). Services sector now accounts for 75% of employment in Ireland. [online] Available at: <https://www.irishtimes.com/business/economy/services-sector-now-accounts-for-75-of-employment-in-ireland-1.3259240> [Accessed 18 Mar. 2018].
- Thomas, H. (2007) ‘An analysis of the environment and competitive dynamics of management education’, *Journal of Management Development*, vol. 26, no. 1, pp. 9–21.
- Thomas, N., S. Eng Chen, D. McGeorge, K. Lam and Evans, S. (2001). Current state of IT usage by Australian subcontractors. *Journal of Construction Innovation*, 1(1): 3-13.
- Thomas, K. & Hore, A. V, (2003). A reflection on the development, activities and deliverables of the Construction IT Alliance (CITA) in Ireland. CIB W89, *International Conference on Building Education and Research*, p.9–11 TS.
- Thomas, J., Harden, A., (2008). Methods for the thematic synthesis of qualitative research in systematic reviews. *BMC Med. Res. Methodol.* 8, 45. <https://doi.org/10.1186/1471-2288-8-45>
- Todeva, E. & Knoke, D., (2005). Strategic Alliances & Models of Collaboration. *Management Decision*, 43(1), pp.1–22.
- Treacy D., Spillane, J. & Tansey, P., (2016). Construction disputes in small to medium Enterprises in Ireland during recession: identification of critical factors. *International Journal of Law in the Built Environment*, 8(1).
- Tucker, G.C., Windapo, A., Cattell, K.S., (2015). Exploring the use of financial capacity as a predictor of construction company corporate performance. *J. Eng. Des. Technol.* 13, 596–611. <https://doi.org/10.1108/JEDT-10-2013-0074>.
- Tuuli, M.M. & Acquah, S., (2012). Do you feel what I feel? Empowerment contagion in project teams. *Association of Researchers in Construction Management, ARCOM 2012 - Proceedings of the 28th Annual Conference*, 1, pp.563–574.
- Tyson, K.W (1998) *Perpetual strategy: a 21st century essential*, *Strategy and Leadership*, (January/February 1998) 14–19.
- Úbeda-García, M., Claver Cortés, E., Marco-Lajara, B., Zaragoza-Sáez, P., (2014). Strategy, training and performance fit. *Int. J. Hosp. Manag.* 42, 100–116. <https://doi.org/10.1016/j.ijhm.2014.06.001>.
- United Nations Economic Commission for Europe (2006). *Republic of Ireland- National Market Report 2006*. Annual Meeting of Timber Committee 3rd-4th October 2006.

- Varadarajan, P.R. and Jayachandran, S., (1999). Marketing strategy: an assessment of the state of the field and outlook. *Journal of the academy of marketing science*, 27(2), pp.120-143.
- Varyani, M.E. & Khammar, M., (2010). A Review of Strategy-as-Practice and the Role of Consultants and Middle Managers. *Environmental Engineering*.
- Van de Ven, A.H., (1992). Suggestions for studying strategy process: A research note. *Strateg. Manag. J.* <https://doi.org/10.1002/smj.4250131013>
- Van Nederveen, S., Tolman, F., (2001). Neutral object tree support for inter-discipline communication in large-scale construction. *Electron. J. Inf. Technol. Constr.*
- Venkatraman, N. (1989) ‘The Concept of Fit in Strategy Research: Toward Verbal and Statistical Correspondence.’, *Academy of Management Review*, 14(3), pp. 423–444. doi: 10.5465/AMR.1989.4279078.
- Von Nordenflycht, A., (2010). What Is a Professional Service Firm? Knowledge-Intensive Firms. *Academy of Management Review*, 35(1), pp.155–174.
- Von Kutzschenbach, M. & Brønn, C., (2010). You can’t teach understanding, you construct it: Applying social network analysis to organizational learning. *Procedia Social and Behavioural Sciences*, 4(4), pp.83–92. Available at: www.sciencedirect.com.
- Vrijhoef, R., Koskela, L., (2000). The four roles of supply chain management in construction. *Eur. J. Purch. Supply Manag.* [https://doi.org/10.1016/S0969-7012\(00\)00013-7](https://doi.org/10.1016/S0969-7012(00)00013-7).
- Walliman, N., (2017). *Research methods: The basics*. Routledge.
- Walker, Derek H T. (1997). “Choosing an Appropriate Research Methodology.” *Construction Management & Economics* 15 (2):149–59. <https://doi.org/10.1080/01446199700000003>.
- Wall, J. and Ahmed, V. (2005) Issues in Developing a Blended Learning Initiative to Meet Continuing Professional Development Needs of Construction Professionals in Ireland. In: Khosrowshahi, F. (ed.), 21st Annual ARCOM Conference, 7-9 September 2005, School of Oriental and African Studies. Association of Researchers in Construction Management, Vol. 2, 1289-1298.
- Warszawski, A. (1996) ‘Strategic planning in construction companies’, *Journal of construction engineering and management*, 122(2), pp. 133–140. doi: 10.1061/(ASCE)0733-9364(1996)122:2(133).
- Webb, S. P. (1998). *Knowledge Management: Linchpin of Change*, The Association for Information Management (ASLIB), London.
- Weisheng, L. et al., (2016). Corporate Social Responsibility Disclosures in International Construction Business: Trends and Prospects. *Journal of Construction Engineering & Management*, 142(1), pp.1–14.
- Wenger, E. (2000) *Communities of practice and social learning systems*. Organization,

7(2), 225–46.

- Wernerfelt, B., (1984). A resource-based view of the firm. *Strateg. Manag. J.* <https://doi.org/10.1002/smj.4250050207>
- Whelan, B. (2017). The construction sector – impact of Brexit. [Online] Grant Thornton Ireland.
- Wheelen, T.L. and Hunger, J.D., (2011). Concepts in strategic management and business policy. Pearson Education India.
- Whittington, R. (2002) 'Practice perspectives on strategy: Unifying and developing a field'. Academy of Management Conference Proceedings, Denver, CO, August.
- Whittington, R. (2003) The work of strategizing and organizing: For a practice perspective. *Strategic Organization*, 2003, 1, 119–27.
- Whittington, R. (2006) Completing the practice turn in strategy research, *Organization Studies* 27(5), 613-634 (2006).
- Whittington, R., Molloy, E., Mayer, M., Smith, A., (2006). Practices of Strategising/Organising. Broadening Strategy Work and Skills. *Long Range Plann.* 39, 615–629. <https://doi.org/10.1016/j.lrp.2006.10.004>.
- Whittington, R. & Caillaud, L., (2008). The Crafts of Strategy. Special Issue Introduction by the Guest Editors. *Long Range Planning*, 41(3), pp.241–247.
- Whittington, R. et al., (2006). Practices of Strategizing/Organising. Broadening Strategy Work and Skills. *Long Range Planning*, 39(6), pp.615–629.
- Wilkinson, S., (1998). Focus group methodology: A review. *Int. J. Soc. Res. Methodol.* <https://doi.org/10.1080/13645579.1998.10846874>.
- Williams, C., (2007). Research Methods. *J. Bus. Econ. Res.* 5, 65–72. <https://doi.org/10.1093/fampract/cmi221>.
- Winch, G., Schneider, E. (1993) Managing the knowledge based organization—the case of architectural practice. *Journal of Management Studies*, 30: 923–937.
- Yang, C.-C. & Yeh, T.-M., (2009). An integrated implementation model of strategic planning, BSC and Hoshin management. *Total Quality Management & Business Excellence*, 20(9), pp.989–1002.
- Yang, H., Yeung, J.F.H, Chan, A.P.C., Chiang, Y.H., Chan, D.W.M (2010),"A critical review of performance measurement in construction", *Journal of Facilities Management*, Vol. 8 Iss 4 pp. 269-284 <http://dx.doi.org/10.1108/14725961011078981>
- Yang, D. (2011) The Effect of Knowledge Management on Product Innovation - Evidence from the Chinese Software Outsourcing Vendors, *iBusiness*, 2011, 3, pp. 16-22.
- Yang, J., (2012). Innovation capability and corporate growth: An empirical investigation in China. *J. Eng. Technol. Manag. - JET-M* 29, 34–46.

<https://doi.org/10.1016/j.jengtecman.2011.09.004>

- Yang, J. et al., (2014). Benefit Analysis of Knowledge Management System for Engineering Consulting Firms. , 30(4), pp.1–8.
- Zack, M., McKeen, J. and Singh, S., (2009). Knowledge management and organizational performance: an exploratory analysis. *Journal of knowledge management*, 13(6), pp.392-409.
- Zahra, S.A., Sapienza, H.J., Davidsson, P., (2006). Entrepreneurship and dynamic capabilities: A review, model and research agenda. *J. Manag. Stud.* <https://doi.org/10.1111/j.1467-6486.2006.00616.x>
- Zeithaml, V., Parasuraman, A. and Berry, L. (1985), Problems and strategies in services marketing, *Journal of Marketing*, 49(Spring), 33-46.
- Zikmund, W.G. (2003). *Business Research Methods*. Mason, Ohio: Thomson/South-Western.
- Zou, P., (2012). Knowledge Management Practice in Two Australian Architecture-Engineering-Construction (AEC) Companies. *Australasian Journal of Construction Economics and Building*, 4(2), p.19.
- Zuofa, T., Ochieng, E. & Burns, A., (2015). Appraising knowledge management perceptions among construction practitioners. *Proceedings of Institution of Civil Engineers: Management, Procurement and Law*, 168(MP2), pp.89–98.

APPENDICES

Appendix A- Full Online survey (Sample)



THE STRATEGY PROCESS IN IRISH CONSULTING ENGINEERING PRACTICES

This questionnaire forms part of an ongoing PhD research project being undertaken in the School of Surveying and Construction Management in DIT, and is structured in five sections as follows:

Section 1: General Company Information

Section 2: Strategic Outlook

Section 3: Strategic Decision Making Process Characteristics

Section 4: Knowledge Management

Section 5: Role of the professional body

In most instances, the questions are multiple choice or require you to select an answer option to determine the extent of your agreement with a particular statement. Please feel free to provide further comments when applicable.

Responses to the questionnaire will be anonymised thus no individual respondent will be identified in the analysis of results.

At the end of the survey, you will be asked if you wish to participate in the second phase (qualitative phase) of the project. The second phase involves a short interview to gain further depth of insight regarding the strategy process. Participation is entirely voluntary and no individual nor company will be identified in the analysis of findings.

Should you have any queries regarding the research, please do not hesitate to contact the project team.



THE STRATEGY PROCESS IN IRISH CONSULTING ENGINEERING PRACTICES

SECTION 1 GENERAL COMPANY INFORMATION

*** 1. The following question seeks information about the nature of your professional practice.**

Please select the option that best describes the type of company within which you work (select only one)

- Professional engineering consultancy
- Contracting engineering firm
- Other (please specify)

*** 2. Which of the following options best describes your current position within the company (select only one option).**

- Managing Director / Chief Executive Officer
- Director
- Associate Director
- Senior Engineer
- Engineer
- Other (if your position is not listed above, please specify)

3. How long has your company been in operation?

- 1-5 years
- 6-10 years
- 11-15 years
- 16-20 years
- 21-30 years
- more than 30 years

4. How many people are currently employed full-time in your company (including administrative staff)?

- less than 10 employees
- 11-49 employees
- 50-99 employees
- 100-149 employees
- 150-250 employees
- More than 250 employees

5. Are you currently experiencing difficulties in recruiting the following staff?

	Yes	No
Experienced structural engineers	<input type="radio"/>	<input type="radio"/>
Resident engineers	<input type="radio"/>	<input type="radio"/>
Project Supervisor Design Process (PSDP)	<input type="radio"/>	<input type="radio"/>
Water / Wastewater engineers	<input type="radio"/>	<input type="radio"/>
BIM Designers	<input type="radio"/>	<input type="radio"/>
Environmental scientists	<input type="radio"/>	<input type="radio"/>

Other. Please indicate other types of staff you are experiencing difficulty recruiting

6. Please indicate the ownership structure that best describes your company (select only one).

- Sole practitioner
- Partnership
- Public Limited Company
- Part of an international consultancy practice
- Other (please specify)

*** 7. The following question seeks to determine the sectors that your practice operates within.**

Please indicate the sectors in which your company currently provides services (select as many as are appropriate).

- Residential (private / public)
- Private non-residential (offices, retail, industrial)
- Public non-residential (schools, hospitals)
- Productive infrastructure (civil, water services)
- Social / community buildings
- Other (please specify)

*** 8. The following question seeks to determine the range of services offered by your company.**

Please confirm the services that your company currently provides to clients (select as many as are appropriate).

- | | | |
|--|--|--|
| <input type="checkbox"/> Engineering design | <input type="checkbox"/> Project supervision, scheduling and programming (project controls) | <input type="checkbox"/> Fire Engineering |
| <input type="checkbox"/> Value Management (Cost Control and Value Engineering) | <input type="checkbox"/> Sustainability advice (Life cycle costing, life cycle analysis and energy efficiency) | <input type="checkbox"/> Mechanical & Electrical Engineering |
| <input type="checkbox"/> PSDP | <input type="checkbox"/> Civil & Structural Engineering | <input type="checkbox"/> Water & Wastewater Engineering |
| <input type="checkbox"/> Project Management | <input type="checkbox"/> Health and Safety Engineering | <input type="checkbox"/> Environmental Engineering |
| <input type="checkbox"/> Arbitration & Mediation | <input type="checkbox"/> Forensic Engineering | <input type="checkbox"/> Geotechnical Engineering |
| <input type="checkbox"/> Assigned Certifier | <input type="checkbox"/> Traffic & Transportation Engineering | <input type="checkbox"/> Building Services Engineering |
| <input type="checkbox"/> Other (please specify) | | |

*** 9. Has the range of services offered by your company reduced / expanded in the last five years?**

- Reduced
- Expanded
- Stable / No change
- Other



THE STRATEGY PROCESS IN IRISH CONSULTING ENGINEERING PRACTICES

SECTION 2: STRATEGIC OUTLOOK

This section seeks to ascertain the key factors shaping your organisation's strategic decision-making process.

10. The following statements outline various high level / corporate strategic options.

Please select the statement that best describes your organisation's **current** overall corporate strategy / objectives (select only one option).

- 1. We seek to **expand** our current market position
- 2. We seek to **maintain** our current market position
- 3. We are currently **rationalizing / downsizing** our current practice in pursuit of increased efficiency
- Combination of two of the above (If this option is selected, please confirm the combination e.g. Option 1 & 3)

11. In relation to the option selected in Q 10 above, please confirm if the corporate strategy of your organisation has changed over the last 5 years?

- No, it has not changed
- Yes, it has changed (if so, please elaborate in the comment section)

12. In order to achieve the corporate level strategy, please confirm the mechanism adopted at the operational level to realise this goal.

Please select one option from the list below. If option 5 is selected, please provide the numbers relating to the specific combination.

- 1. We strive to achieve **lower cost** of service provision than competitors
- 2. We strive to **differentiate** our services from competitor offerings
- 3. We **focus** on a particular segment of the market
- 4. We concentrate on offering **superior value** of services to clients
- 5. We **combine strategy** (please state which combination e.g. Option 1 and 3)

13. In relation to the option selected in Q.12 above, please confirm if the operational level strategy of your organisation has changed over the last 5 years?

- No, it has not changed
- Yes, it has changed (if so, please elaborate in the comment section)

14. The following question seeks to determine your organisation's approach to delivering consultant engineering services.

Please select only one option

- We are primarily concerned with pioneering new services and developing innovative techniques for service delivery
- We seek ways of defending our current market share in some sectors while exploring promising opportunities in others after a careful review of the market
- Our primary focus is on optimising internal efficiency based on our resources availability
- Our decisions are based mainly on circumstances as they arise

15. The following statements represent varying approaches to strategic decision making.

Please select the usual approach adopted by your organisation from the options below (select only one option).

- Objectives are first determined followed by business environment analysis before making decisions
- Strategy emerges as opportunities and challenges arise
- Our internal resource availability usually drives the planning process e.g. finance, human resources
- Technological change drives our corporate decision making process

16. The following question seeks to determine your organisation's overall risk attitude.

Please select the statement that best describes your organisation's attitude to risk (select only one option).

- Our company embraces projects with potentially high risk, but with potential to reach corporate objectives
- We prefer low-risk projects
- We believe it is best to explore opportunities gradually
- We adopt a cautious "wait & see" approach

17. This question seeks information regarding fees charged by Irish Consulting engineers.

Please select the extent of agreement / disagreement with the following statements.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Fees charged by Irish Consulting Engineers are competitive compared to that of international counterparts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fee competition within the Irish Consulting Engineering sector is intense	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Due to the intensity of fee competition, we have to offer lower prices	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
We have decided not to compete for a project in the past due to low level of fee potential	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

18. This question seeks to understand your organisation's strategic alternative options.

Please select the variations below being considered / pursued by your organisation (select as many as are appropriate).

- Strategic partnership (ie. at firm not project level)
- Acquisition of an engineering consultancy practice
- Merger with an engineering consulting practice
- International expansion
- None of the above



THE STRATEGY PROCESS IN IRISH CONSULTING ENGINEERING PRACTICES

SECTION 3: STRATEGIC DECISION MAKING PROCESS CHARACTERISTICS

The questions contained in this section seek to determine the varying characteristics of the strategic decision-making process within your organisation.

Please be reminded that answers to every question will be aggregated such that no individual response will be identified in the analysis of results.

19. This question seeks to identify key aspects / characteristics of your organisation's strategic decision-making process.

Please indicate the extent of your agreement / disagreement with the following statements in relation to your firm.

	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Analysis of the construction industry is undertaken on an ongoing basis (e.g. industry reports; Tender Price Indices)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The macroeconomic environment is systematically reviewed (e.g GDP; Interest Rates; Employment trends)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Competitor analysis is regularly undertaken	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There is an ongoing review of the internal business processes in our firm (e.g. recruitment, marketing, IT)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Investment in staff training and development is prioritised	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Repeat business from existing clients is critical to our success	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Internal quality assurance mechanisms are reviewed on an ongoing basis	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Investment in research and development is important to our organisation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The decision making process is "top down" (i.e. senior management only)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
External consultants are engaged to facilitate our strategic decision making process	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Opportunities to secure repeat business with existing clients are actively sought	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

20. This question seeks to identify how strategic decisions are disseminated within your organisation.

Please indicate the extent of your agreement / disagreement with the following statements.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Clear numerical targets are set (e.g. fees / profit / operational costs) and monitored	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
We use performance measures in tracking the realisation of strategic objectives (e.g. Balanced scorecard)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Strategy tools are used in our decision-making process (e.g. SWOT analysis; scenario planning etc)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Strategic decisions are communicated via formal communication channels within our organisation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

21. What is the duration of your average strategic decision making cycle?

- Annually
- 2 years
- 3 years
- 5 years
- 5-10 years
- As often as required

*** 22. Please indicate if any of the following are in place within your organisation.**

	Yes	No	Don't know
Mission statement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Corporate objectives	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Company vision statement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Financial Plan / Targets	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ISO Certification	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Strategic planning models e.g. SWOT model, PESTEL Analysis, Balanced Score Card	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Written strategic plan	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Annual financial plan	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



THE STRATEGY PROCESS IN IRISH CONSULTING ENGINEERING PRACTICES

SECTION 4: KNOWLEDGE MANAGEMENT IN STRATEGIC DECISION MAKING

The Engineering profession is highly knowledge intensive.

This section seeks to determine how knowledge (pertaining to People, Process & Technology) is acquired, managed and disseminated throughout your organisation.

23. The following question addresses the **people-related factors** in the acquisition and communication of knowledge for strategic decision-making.

Please indicate the extent of your agreement with each statement.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
We rely heavily on professional networks to acquire industry insight / knowledge e.g. ACEI / Engineers Ireland	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
We regularly engage in training and development of staff	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Our organisation utilises client feedback to improve our business processes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
New knowledge acquisition by employees forms part of staff annual / performance review	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
We have an internal company culture that facilitates knowledge sharing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

24. The following question relates to the **process-related factors** in the acquisition and communication of knowledge for strategic decision-making.

Please select the statement that best describes your knowledge management process (select only one)

- Our knowledge acquisition process is formal / deliberate
- Knowledge is acquired as the need arises / emerges

25. The following question relates to **technology-related factors** in the acquisition and communication of knowledge for strategic decision-making.

Please indicate the extent of your agreement with each statement.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Our firm has a culture of technological innovation as part of its organisational values	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Technology is critical to the improvement of our firm's internal business process	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Our firm is currently investing in the acquisition of new technologies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Investment in technology is crucial to maintaining our firms competitive position	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



THE STRATEGY PROCESS IN IRISH CONSULTING ENGINEERING PRACTICES

SECTION 5: ROLE OF THE PROFESSIONAL BODY

26. This question seeks to determine the views of member firms in relation to the ACEI membership requirements and priorities.

Please indicate the extent of your agreement with each statement.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
ACEI membership should be limited to Member Firms (MConsEI) and individual FConsEI and RConsEI membership within firms	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ACEI membership should be limited to firms undertaking only <u>Consulting Engineering Design</u> work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ACEI membership should be open to firms undertaking <u>Design and Contracting</u> work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ACEI membership should be open to other professionals with comparable CEng qualification working in consulting engineering e.g. Geologists, Environmental scientists and Ecologists	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ACEI should be structured as an integrated section / division within Engineers Ireland	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ACEI should be a separate association co-located in the Engineers Ireland premises	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ACEI should partner with another umbrella business organisation, such as IBEC	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ACEI should prioritise marketing the profession to undergraduates and graduates to meet future skills requirements	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ACEI should prioritise assisting SME firms to develop BIM and related technologies for future project requirements	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ACEI strongly represents and promotes consulting engineering member firms and the industry	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



THE STRATEGY PROCESS IN IRISH CONSULTING ENGINEERING PRACTICES

THANK YOU FOR YOUR PARTICIPATION

Thank you for taking the time to complete this survey on Strategic Management processes in Irish Consulting Engineering Practices, your participation is very much appreciated.

Please be reminded that answers to the survey will be aggregated such that no individual respondent / company will be identified in the analysis of results.

As noted, the findings will contribute to an ongoing PhD research project in DIT. This is the first phase of the study, the second phase involves a short interview with key industry stakeholders. Please indicate whether you would be willing to participate in the second phase by answering the question below.

Should you have any queries regarding the research, please do not hesitate to contact the project team (surveyingresearch@dit.ie) or alternatively the lead supervisor Dr. Roisin Murphy (roisin.murphy@dit.ie)

Once again, many thanks for your participation.

Kind regards,

**Dr. Roisin Murphy (Senior Lecturer, DIT; Lead Supervisor)
Mr. Oluwasegun Seriki (PhD Candidate)**

27. Please indicate whether you would be willing to participate in the qualitative phase (phase II) of the PhD research project. If you are willing to participate in the second phase, please provide contact details in the space provided below.

- I am not willing to participate in phase II
- I am willing to participate in phase II (please provide name and email address in the space provided below).

Appendix B-Interview protocol matrix for qualitative stage

	Research Question I	Research Question II	Research Question III	Research Question IV
Interview Q1	X			X
Interview Q2	X	X		
Interview Q3		X	X	
Interview Q4		X	X	
Interview Q5		X	X	X
Interview Q6	X	X		
Interview Q7	X	X		
Interview Q8	X	X		X
Interview Q9	X	X	X	
Interview Q10	X	X	X	

Appendix C- Full Interview Protocol for qualitative stage

Question: About firm

Possible follow-up questions/Themes (Links: Tell me about.....

To begin this interview, I'd like to ask you some questions about the practice and the business which you are involved (**mostly about issues surrounding role, number of years of experience/working with the firm, and career/academic background for context**)

<p>1. Based on the information provided in the earlier phase, your firm is a PQS/ENG/ARCH firm. Were you working here when the firm was founded? How did you get into the construction industry?</p> <p>If the interviewee identifies as having been with the firm since inception, probe with the next questions.</p> <p>Vision, mission of the firm: written or not</p> <p>Tell me about the core business areas of the firm. Have they changed or not since inception?</p> <p>Can you walk me through the process of decision-making within your firm? Who participates in goal-setting?</p>	<p>Strategy type</p>	<p>Scope</p>	<p>Planning horizon</p>	<p>Participation</p>
<p>2. Open-ended question: Let's talk about the Irish construction sector. How did your firm pull through the recession? How did/are you respond/ing to the crash/recovery?</p> <p>Follow up: What was that business like in that period? What conditions/support has ensured survival up till this point?</p>	<p>Impact on service offerings (reduction/increase/stabl e/other)</p>	<p>Retrenchment</p>	<p>Response strategies</p>	<p>Adaptation/Change</p>

<p>3. How would you describe the business environment now _____? In answering this question, you talk about how you have adjusted your business to meet the shocks left by the recession i.e. in terms of HR, tendering for projects etc.</p>	Turbulence	Change in the industry	Corporate strategy	Strategic choice
<p>4. In the delivery of services, would you say your firm favours offering low-cost services, or you choose to focus on just a particular market segment? Or do you rather seek to do things differently from others to gain market share? In relation to the above, what kind of risk attitude would you think your organisation fits into? Do you embrace high risk projects with potential returns or prefer low risk projects?</p>	Porter's Generic strategies	Risk attitude of firm	Risk attitude of Strategist	Competitor analysis
<p>5. Speaking about your approach to decision making, do you undertake a review of industry trends before setting agendas and business targets? I.e. industry analysis and economic watch e.g. tender price indices, GDP/GNP values etc. In addition, do you seek repeat business or look to the market for opportunities for Mergers/Acquisitions/Joint-ventures etc. Also, do you reckon that your leadership style may affect the decisions taken by your firm? (Try fitting into leadership styles e.g. participative, consultative, benevolent or authoritative)</p>	Industry and Economic analysis	Growth strategies	Top-down/Bottom-up approach to decision making	Leadership style
<p>6. Still on the issue of decision making, who is involved in taking key decisions that shape the future of the firm? How are these key</p>	Who is involved?	What they do?	How they take these decisions?	What they use to inform decision

decisions taken (e.g. strategy meetings, emails, external consultants brought in)

making?

Can you give any reasons why these people are involved and the exclusion of others?

- | | | | | |
|--|--|---|---|---|
| <p>7. After strategic decisions are taken and objective determined, how long does it take before they are reviewed?
And are there any measures to track whether or not they have been achieved?
Do you employ any tools in making strategy decisions such as SWOT Analysis, PESTEL or undertake strategy workshops?</p> | <p>Strategy performance monitoring</p> | <p>Strategy communication</p> | <p>Tracking implementation</p> | <p>Impact on business outcomes</p> |
| <p>8. Currently, knowledge is considered as a very vital asset for firms, particularly PSFs. How does your firm acquire new knowledge? Via professional bodies or employees?
Any incentives for employees who bring in new knowledge or internal firm strategy for knowledge acquisition?
Is your knowledge acquisition process formal or emergent (expatiate)? Tacit or explicit?
What is the role of technology in knowledge acquisition and its overall impact on your firm strategy?</p> | <p>People
Know-Who</p> | <p>Process
Know-how
Know-what
Know-Why
Know-Where</p> | <p>Technology
Know-how</p> | <p>Incentives to KA
Innovation?</p> |
| <p>9. There has been calls for increased collaboration within construction. Does your firm engage in any form of collaboration (inter-firm or across professions).
If Yes, what is the nature of this collaboration (s)?</p> | <p>Intra-firm collaboration</p> | <p>Interfirm collaboration</p> | <p>Cross professional collaboration</p> | |

If No, why do you think this is the case?

Any suggestions as to steps to increase collaboration (within professions and across AES sector)?

10. Looking to the future, what would you consider as the most crucial element in future proofing of PSFs to meet the evolving demands of the turbulent construction sector?
- Skills? IT know-how? Growth hacking? Leadership/Succession planning? Other _____
- | | | | |
|-------------------------|---------------------|---------------------|------------------------------------|
| Future of organisations | Succession planning | Post-Brexit outlook | Preparation for digital disruption |
|-------------------------|---------------------|---------------------|------------------------------------|
-

End of Survey and Thank you message:

I appreciate the time you took for this interview. **Is there anything else you think would be helpful for me to know so that I can include in my report** (If Yes, take down; if No, continue). I should have all the information I need. Would it be alright to call you for any follow-up or clarification if needed?

Once again, thank you for your participation in the qualitative stage of this research enquiry. Please note again that all responses will be anonymised and no personal data or company information will be identifiable in the analysis or reporting of the results of this interview. All interview data and recordings will be stored on secure platforms and encrypted, in line with the TU Dublin research integrity and ethics guidelines.

You will receive a full transcript of the interview within the next two weeks for a review to see if the data fully reflects your thoughts and for quality assurance.

Many thanks for your participation.

Mr. Oluwasegun Seriki (PhD Candidate)

Dr. Roisin Murphy (Research Supervisor)

Appendix D- TU Dublin Ethical approval application

Research Ethics Application

Submission Date	2017-11-10 08:41:51
Title of Project	Strategy Formulation in Construction Professional Service Firms
REC Ref no.	REC-17-140
Lay Summary	<p>The Irish construction industry has undergone substantial change in the past decade. Following a deep, lengthy recession, the improving outlook of the construction sector makes the inquiry into strategy within the firms both timely and appropriate. Determining how construction organizations successfully adapt in a highly turbulent industry is critical to ensure survival in a highly cyclical industry sector.</p> <p>As a response to the improving prospects in the Irish construction industry, it becomes important to align with recent research directions within strategy research in pursuing focus on the "human-element" factors of the strategy, rather than mere frameworks. This research inquiry is designed around the key questions that guide strategy-as-practice research i.e. practices, practitioners and/or praxis (3 P's). Understanding this will lead to further empirically test how construction PSFs organize their strategy on an individual basis (intra-firm analysis) and compare this to what is being done across other professions (cross professional analysis).</p> <p>Though research studies conducted on strategic planning in Irish quantity surveying practices; and response strategies of Irish construction firms during recession contributed to strategic planning in the Irish construction professional service firms(CPSFs), recent studies are yet to focus on the critical influences of digital technologies on strategic planning processes in Irish CPSFs practices. Similarly, existing studies on strategic planning from Irish construction perspective have not addressed the dynamic capabilities of Irish CPSFs. As a result, this research focuses on the influences of digital technologies on strategic planning processes of Irish CPSFs. The study will also explore the development of dynamic capabilities of Irish CPSFs in turbulent environmental conditions such as uncertainties; high level of technological changes; complex expectation of clients; and demand volatility.</p>
Overall Aim of the Study	<p>A 2012 study carried out by Murphy (2012) highlighted that gaps in understanding about the strategy process in Irish quantity surveying firms, prompting the need for an in-depth study into the strategy of these firms as the economy continues its path to recovery. The construction sector has been relatively hesitant about embracing change and rethinking its strategy. This unimpressive track record can be attributed to various internal and external challenges: the persistent fragmentation of the industry, inadequate collaboration with suppliers and contractors, the difficulties in recruiting a talented workforce, and insufficient knowledge transfer from project to project, to name just a few. Our research aim seeks to address the need for strategic direction and integration between strategy processes, knowledge and technology in the construction industry. This study presents an opportunity for CPSFs to identify the type, scope and extent of strategy deployment within architectural engineering and surveying (AES) firms by exploring the characteristics of strategic planning among AES practices, especially from the perspective of their readiness for technological changes and how they acquire knowledge for competitiveness within the Irish business environment.</p>
Principal Investigator	Dr Roisin Murphy

Fwd: Application to the REC (Ref REC-17-140)

----- Forwarded message -----

From: STEVE MEANEY <steve.meaney@dit.ie>

Date: Mon, Jan 8, 2018 at 11:35 PM

Subject: Re: Application to the REC (Ref REC-17-140)

To: Roisin Murphy <roisin.murphy@dit.ie>

Thanks Roisín,

Much appreciated. I can confirm that this is now approved, but I would note that it might be prudent to clarify the details re. the anonymous nature of the survey in the information sheet. The REC would generally advise that the consent question be compulsory in that you must tick yes to complete the survey.

Regards,

Steve Meaney, PhD

Assistant Head of School - Biological Sciences,

Chair DIT Research Ethics Committee,

School of Biological Sciences (Rm KE2-002),

College of Sciences and Health,

Dublin Institute of Technology,

Kevin Street,

Dublin 8

Appendix E-Full list of qualitative interview respondents

S/N	Type of firm	Size	Rural/Urban	Code	Year of establishment	Years of experience (Strategist)
Consultant Engineering firms (9 practices)						
1	Consulting Engineering	Large	Urban	LE1	32 years	>30 years
2	Consulting Engineering	Large	Urban	LE2	29 years	> 30 years
3	Consulting Engineering	Large	Urban	LE3	46 years	> 30 years
4	Consulting Engineering	Large	Urban	LE4	60 years	>40 years
5	Consulting Engineering	Large	Urban	LE5	73 years	>30 years
6	Consulting Engineering	Large	Rural	LE6	69 years	> 30 years
7	Consulting Engineering	Medium	Urban	ME1	40 years	>40 years
8	Consulting Engineering	Medium	Rural	ME2	39 years	> 30 years
9	Consulting Engineering	Small	Urban	SE1	49 years	>25 years
Architectural firms (9 practices)						
10	Architectural	Small	Urban	SA1	25 years	> 30 years
11	Architectural	Small	Rural	SA2	15 years	> 30 years
12	Architectural	Small	Urban	SA3	3 years	>10 years
13	Architectural	Small	Rural	SA4	3 years	> 10 years
14	Architectural	Small	Rural	SA5	15 years	> 30 years
15	Architectural	Medium	Rural	MA1	31 years	> 30 years
16	Architectural	Medium	Urban	MA2	65 years	> 30 years
17	Architectural	Large	Urban	LA1	106 years	> 40 years
18	Architectural	Large	Urban	LA2	91 years	>25 years
Project Quantity Surveyors firms (9 practices)						
19	PQS	Small	Urban	SQ1	11 years	>30 years
20	PQS	Small	Urban	SQ2	23 years	>30 years

21	PQS	Small	Urban	SQ3	44 years	>30 years
22	PQS	Small	Urban	SQ4	38 years	>30 years
23	PQS	Small	Rural	SQ5	6 years	15 years
24	PQS	Medium	Rural	MQ1	9 years	>30 years
25	PQS	Medium	Urban	MQ2	4 years	>30 years
26	PQS	Large	Urban	LQ1	159 years	>30 years
27	PQS	Large	Urban	LQ2	39 years	> 20 years

Appendix F-Informed consent page for online survey



THE STRATEGY PROCESS IN IRISH ARCHITECTURAL PRACTICES

Introduction/Consent Form

This questionnaire forms part of an ongoing PhD research project being undertaken in the School of Surveying and Construction Management, and is structured in six sections as follows:

Section 1: General Company Information

Section 2: Strategic Outlook

Section 3: Strategic Decision Making Process Characteristics

Section 4: Knowledge Management

Section 5: Leadership, succession planning and collaboration in Irish Architectural practices.

Section 6: Information Technology/Digitisation

In most instances, the questions are multiple choice or require you to select an answer option to determine the extent of your agreement with a particular statement. Please feel free to provide further comments when applicable.

Responses to the questionnaire will be anonymised thus no individual respondent will be identified in the analysis of results.

Your participation in this research study is voluntary. You may choose not to participate. If you decide to participate in this research survey, you may withdraw at any time. If you decide not to participate in this study or if you withdraw from participating at any time, you will not be penalized.

At the end of the survey, you will be asked if you wish to participate in the phase II (qualitative phase) of the project.

Participation is entirely voluntary and no individual nor company will be identified in the analysis of findings. This research has been reviewed according to Dublin Institute of Technology Research Ethics procedures for research involving human subjects.

If you have any questions about the research study, please contact the Research supervisor, Dr. Roisin Murphy (roisin.murphy@dit.ie)

ELECTRONIC CONSENT: Please select your choice in the question below.

Clicking on the "Yes" button below indicates that:

• you have read the above information

- you voluntarily agree to participate
- you understand that you can leave the survey at any time and are under no obligation to complete it

If you do not wish to participate in the research study, please decline participation by clicking on the "No" button.

Thank you.

* 1. Do you agree to the above terms? By clicking "Yes", you consent that you are willing to answer the questions in this survey.

No

Yes

Appendix G- Invitation email for Stage I (Quantitative study-QS)

FROM: surveyingresearch@dit.ie via surveymonkey.com
DATE: Wednesday, January 10, 2018 12:46 PM
SENT TO: 236 recipients
SUBJECT: DIT/SCSI Strategy in Irish QS Practices Research
MESSAGE:

DIT/SCSI Strategy in Irish QS Practices Research

Dear [FirstName],

Further to the recent email from Mr. James Lonergan, you will be aware that as part of an ongoing PhD research project in DIT we are surveying senior QS members of the SCSi regarding the strategic decision making process within their organisation.

The aim of the research is to investigate the strategic decision making process within QS practices and to identify key changes in this process resulting from the rapidly changing environment within which your firm operates. As part of this, we wish to investigate knowledge management and the extent of adoption of technology, to ascertain the potential impact on the decision making process and strategic choices made.

To that end we would be much obliged if you could take the time to complete an online survey, which can be accessed by pressing the link below ("DIT Strategy in Irish QS Practices Survey" button).

The survey will take approximately 15 minutes to complete and respondents who complete the survey in full may allocate 1 CPD hour for this purpose.

Please note that all responses will be treated in strict confidence, and all answers will be aggregated such that under no circumstances will individual responses be published at any time. The data collected will be saved in an encrypted file and access is strictly restricted to the undersigned.

Your participation in the research is voluntary, however your participation would be greatly appreciated.

Should you have any queries pertaining to the research please do not hesitate to contact us.

Kind regards

Dr. Roisin Murphy (Senior Lecturer, DIT; Lead Supervisor)

Mr. Oluwasegun Seriki (PhD Candidate)

FROM: surveyingresearch@dit.ie via surveymonkey.com

DATE: Tuesday, February 20, 2018 11:27 AM

SENT TO: 99 recipients

SUBJECT: DIT / ACEI Strategy Process in Irish Consulting Engineering Firms Research

MESSAGE:

The Strategy Process in Irish Consulting Engineering Firms

Dear [FirstName],

As part of an ongoing PhD degree currently being undertaken in DIT, we are seeking insight into the strategy process of Irish Consulting Engineering firms. This research is being undertaken in conjunction with the ACEI.

The first phase of the research involves a survey of ACEI member firms to determine the characteristics of the strategic decision making process, strategic choices made, factors shaping decisions and the role of the ACEI in this regard.

To that end we are requesting your participation in an online survey, which will take approximately 12-15 minutes to complete. Participation in the research is entirely voluntary however, we are hoping to gain a high response rate such that the findings are as representative of ACEI member firms as possible.

Please rest assured that responses to the survey will be anonymised and aggregated such that under no circumstance will individual responses be identified in the analysis nor publication of results.

The survey can be accessed via the blue button below labelled "Strategy Process in Irish Consulting Engineering Firms", and by clicking on the link you are "opting in" to the survey.

We greatly appreciate your participation, and if you would like further information pertaining to the research please do not hesitate to contact us at surveyingresearch@dit.ie

Kind regards

Mr. Oluwasegun Seriki (PhD Candidate)
Dr. Roisin Murphy (Senior Lecturer DIT - Supervisor)

[Strategy Process in Irish Consulting Engineering Firms](#)

Appendix H- Categorisation of codes table for qualitative stage

Name	Files	References
Business environment	27	437
Approach to strategy	11	18
Emergent	2	2
Formal	9	9
Background of strategist	16	29
Comparisons to other professions	2	3
Competitor analysis	25	88
Active	6	8
No competitor analysis	7	14
Passive	12	22
Gov't Policies	6	22
Enablers	2	2
Restrictive	6	11
Industry analysis-Business environment	27	164
Environmental turbulence	15	17
Industry analysis - Passive	17	23
Industry analysis -Active	11	14
Nature of the business environment	18	36
Recession	24	113
Recession-proofing	10	11
Recession-Survival	22	51
Turnaround strategies	0	0
Choice	27	614
Business strategy	26	57
Combination	3	6
Differentiation	15	28
Focus	7	12
Low-Cost	0	0
Stuck in the middle	2	6
Changes	17	27
Choice of where to compete	6	8
Corporate level strategy	25	47
Combination	2	4
Consolidation	11	21
Downsizing	1	2
Expansion	16	25
Insights into Corp strategy	9	11
Dynamic capabilities	5	6
Formality of planning	7	9
Growth strategies	27	190
Collaboration	25	80
Internationalisation	25	44
Joint Venture	22	31
M & A	24	32
Survival	3	3
ISO Certification	5	5
Knowledge Acquisition	26	99
KA Incentives	23	42
KA Structure	26	57
Leadership style	18	24

Authoritative	4	4
Benevolent	5	6
Consultative	12	12
Other	5	6
Participative	7	8
Lessons learned	4	4
Risk Attitude	27	85
Conservators	5	6
Managers	8	10
Maximisers	6	12
Pragmatists	8	15
Strategic Type	18	21
Analysers	7	8
Defenders	5	5
Prospectors	13	15
Reactors	2	2
Time horizon	14	21
Adhoc-As often as needed	2	3
Annual	5	7
Less than a year	7	11
More than a year	4	4
Use of External Consultants	8	11
Decision making characteristics	27	724
Challenges to strategizing	5	9
Client feedback-relationship	9	20
Communication	17	28
Decision making characteristics	18	30
Digital disruption	20	33
Fee potential-Wage Pressure	6	10
Future	25	45
Improving efficiency	3	3
Innovation	5	7
Internal Factors	3	3
Lessons learned	4	4
Mission-Vision statement	25	43
New client acquisition	2	2
Participation	9	10
Participation- Decision making	22	48
Participation- Structure	22	35
Performance measurement	27	63
Professionalism-Professional associations	10	23
Repeat Business	19	26
Reputation	7	16
Research	8	10
Resource allocation	13	19
Strategic HR-Skills shortage	21	65
Strategic plan	25	47
Strategy Models-Tools	13	20
Succession planning	25	39
Technology	26	66
Demographics	27	155
Areas of work	24	47
Background of strategist	16	29
Company information	14	15
Firm age	21	23

Location	9	10
Ownership structure	10	10
Size	19	21
Strategy as practice	16	52
Practices	13	23
Practitioners	9	11
Praxis	12	18

Appendix I- Data reduction of qualitative phase (All nodes)

Nr.	Name	Files	References
1.0	Business environment	27	269
1.1	Competitor analysis	25	44
1.1.1	Active	6	8
1.1.2	No competitor analysis	7	14
1.1.3	Passive	12	22
1.2	Gov't Policies	6	9
1.2.1	Enablers	2	2
1.2.2	Restrictive	6	11
1.3	Industry analysis-Business environment	27	74
1.3.1	Environmental turbulence	15	17
1.3.2	Industry analysis - Passive	17	23
1.3.3	Industry analysis -Active	11	14
1.3.4	Nature of the business environment	18	36
1.4	Recession	24	142
1.4.1	Recession-proofing	10	11
1.4.2	Recession-Survival	22	51
1.4.3	Turnaround strategies	20	29
2.0	Choice	27	820
2.1	Business strategy	27	109
2.1.1	Combination	3	6
2.1.2	Differentiation	15	28
2.1.3	Focus	7	12
2.1.4	Low-Cost	0	0
2.1.5	Stuck in the middle	2	6
2.2	Corporate level strategy	27	110
2.2.1	Combination	2	4
2.2.2	Consolidation	11	21
2.2.3	Downsizing	1	2
2.2.4	Expansion	16	25
2.2.5	Insights into Corp strategy	9	11
2.3	Growth strategies	27	190
2.3.1	Collaboration	25	80
2.3.2	Internationalisation	25	44
2.3.3	Joint Venture	22	31
2.3.4	M & A	24	32
2.3.5	Survival	3	3
2.4	Knowledge Acquisition	26	99
2.4.1	KA Incentives	23	42
2.4.2	KA Structure	26	57
2.5	Leadership style	27	60
2.5.1	Authoritative	4	4
2.5.2	Benevolent	5	6
2.5.3	Consultative	12	12

2.5.4	Other	5	6
2.5.5	Participative	7	8
2.6	Other factors influencing strategy	24	70
2.6.1	Changes	17	27
2.6.2	Choice of where to compete	6	8
2.6.3	Dynamic capabilities	5	6
2.6.4	Formality of planning	7	9
2.6.5	ISO Certification	5	5
2.6.6	Lessons learned	4	4
2.6.7	Use of External Consultants	8	11
2.7	Risk Attitude	27	85
2.7.1	Conservators	5	6
2.7.2	Managers	8	10
2.7.3	Maximisers	6	12
2.7.4	Pragmatists	8	15
2.8	Strategic Type	27	51
2.8.1	Analysers	7	8
2.8.2	Defenders	5	5
2.8.3	Prospectors	13	15
2.8.4	Reactors	2	2
2.9	Time horizon	18	46
2.9.1	Adhoc-As often as needed	2	3
2.9.2	Annual	5	7
2.9.3	Less than a year	7	11
2.9.4	More than a year	4	4
3.0	Decision making characteristics	27	681
3.1	External-business environment related factors	21	75
3.1.1	Fee potential-Wage Pressure	6	10
3.1.2	Strategic HR-Skills shortage	21	65
3.2	Future	25	45
3.2.1	Succession planning	25	39
3.3	Internal Factors	27	443
3.3.1	Challenges to strategizing	5	9
3.3.2	Client feedback-relationship	9	20
3.3.3	Communication	17	28
3.3.4	Decision making characteristics	18	30
3.3.5	Improving efficiency	3	3
3.3.6	Innovation	5	7
3.3.7	Lessons learned	4	4
3.3.8	Mission-Vision statement	25	43
3.3.9	New client acquisition	2	2
3.3.10	Participation	9	10
3.3.11	Participation- Decision making	22	48
3.3.12	Participation- Structure	22	35
3.3.13	Performance measurement	27	63
3.3.14	Repeat Business	19	26
3.3.15	Reputation	7	16

3.3.16	Research	8	10
3.3.17	Resource allocation	13	19
3.3.18	Strategic plan	25	47
3.3.19	Strategy Models-Tools	13	20
3.4	Professionalism-Professional associations	10	52
3.4.1	Professional bodies	9	22
3.4.2	Professionalism	3	7
3.5	Technology	26	66
3.5.1	Digital disruption	20	33
4.0	Demographics	27	185
4.1	Approach to strategy	27	27
4.1.1	Emergent	6	2
4.1.2	Planned	21	21
4.2	General company information	27	158
4.2.1	Areas of work	24	47
4.2.2	Background of strategist	16	29
4.2.3	Company information	14	15
4.2.4	Comparisons to other professions	2	3
4.2.5	Firm age	21	23
4.2.6	Location	9	10
4.2.7	Ownership structure	10	10
4.2.8	Size	19	21
5.0	Strategy as practice	16	52
5.1	Practices	13	23
5.2	Practitioners	9	11
5.3	Praxis	12	18

Appendix J-Full list of open codes developed in qualitative stage

Open code	Files	References	Description
Approach to strategy	2	3	Outlines how the firm approaches strategy i.e. either formally, informally or driven by other factors.
Areas of work	24	47	This node explores the areas of work where the respondent firms conduct their business.
Background of strategist	16	29	This node gives insight into the educational and career background of the strategist being interviewed.
Brexit	25	35	Explores references to Brexit and its implications on the Irish construction market.
Business strategy	27	58	Identifies nodes where participants explain the methods used to achieve their corporate objectives.
Challenges to strategizing	5	9	Problems faced by firms in the formulation of strategy
Changes	17	27	This node identifies areas of change in the business environment as outlined by respondents.
Choice of where to compete	6	8	Decision of which markets to compete in.
Client feedback-relationship	9	20	Nodes related to client feedback and the importance of client interactions
Collaboration	22	30	This nodes contains information on collaboration
Communication	17	28	This node explores how strategic decisions are communicated within firms.
Company information	14	15	Explores themes related to demographic information about the company
Comparisons to other professions	1	1	This node speaks about comparisons between professions.
Competitor analysis	25	44	Explores how the firm conducts competitor analysis
Corp-Insights	9	11	Additional insights into corporate strategy
Corporate strategy	27	49	High level vision and direction of the firm
Cross-professional collaboration	15	17	contains themes related to firm collaboration across professions
Decision making characteristics	18	30	Outlines the decision-making characteristics of the firms
Digital disruption	20	33	Addresses themes related to digital disruption
Dynamic capabilities	5	6	Nodes related to dynamic capabilities
External consultants	8	11	Firms who employ external consultants for strategy training
Fee potential-Wage Pressure	6	10	Explores the effect that low fee potential and wage pressure on strategy
Firm age	21	23	Year when firm was established
Formality of planning	5	6	Is the strategy process formal or not?
Future	25	45	Key strategic issues in the future of CPSFs in Ireland
Gov't Policies	6	9	This node explores how government policies influences strategy
Improving efficiency	3	3	Strategies targeted at improving efficiencies
Industry analysis-Business environment	27	74	This node explores themes related to industry analysis and the business environment
Informal vision statement	3	3	Node contains information on informal vision statements
Innovation	5	7	This node contains references to innovation or innovative practices
Internal Factors	3	3	This node contains references to internal factors that influence strategy

Internationalisation	25	44	Node contains information related to internationalisation efforts of the firm
ISO Certification	5	5	This node contains information about ISO certification
Joint Venture	22	31	This node contains references to engagement in Joint ventures
KA Incentives	23	42	Incentives for knowledge acquisition within companies
KA Structure	26	57	Structure of the knowledge acquisition process
Leadership style	27	33	Node contains information of leadership styles adopted by strategists
Lessons learned	4	4	This node contains lessons learned by strategists from the entire strategy process
M & A	24	32	This node contains information related to Mergers and Acquisitions
Mission-Vision statement	25	43	Node contains references to the mission and vision statement of the firm
New client acquisition	2	2	Node contains information related to new client acquisition
Number of employees	19	21	This node contains information about the number of employees within a practice, which defines its size
Others	17	26	References to themes that are not classified under any of the open coding themes
Ownership structure	10	10	This node contains information on the ownership structure of the firms
Participation	9	10	This node contains information of company-wide participation in the strategy process
Participation- Decision making	22	48	A subset node that contains information about participation in decision-making
Participation- Structure	22	35	Node contains information about the structure of participation within the firms
Performance measurement	27	63	Relates to information about performance measurement within firms
Practices	13	23	Cognitive, behavioural, procedural, discursive, motivational and physical practices
Practitioners	9	11	Actors who shape the construction of practice
Praxis	12	18	Situated, socially accomplished flows of activity
Professionalism-Professional associations	10	23	Node contains information related to professionalism and professional associations
Recession	23	51	Other references to recession not classified under survival or proofing activities
Recession-proofing	10	11	This node contains information related to how firms proof themselves against recession
Recession-Survival	22	51	This node contains references to survival techniques adopted by the practices during the recession
Repeat Business	19	26	This node outlines the importance of repeat business to CPSFs
Reputation	7	16	Node refers to reputational issues related to CPSFs
Research	8	10	Node contains information about the research activities undertaken by the firm
Resource allocation	13	19	Node contains information related to how resources are allocated within the firm
Risk Attitude	27	43	This node contains information about the risk attitude of the strategist and the firm
Rural-Urban	9	10	Node contains information about the location of the firm
Strategic HR-Skills shortage	21	65	This node contains information related to strategic human resourcing and skills shortage in PSFs
Strategic partnerships	22	37	Contains references to strategic partnerships engaged in/or not
Strategic plan	25	47	Contains references to strategic planning

Strategic Type	27	30	Node contains references to Miles and Snow's strategic typologies
Strategy Models-Tools	13	20	Explores strategy tools and models adopted within practices
Succession planning	25	39	Plans for succession within the company
Survival	3	3	Themes related to survival techniques employed by the firm
Technology	26	66	contains themes related to technology
Time horizon	18	25	Explores themes related to how often strategic plans are revised.
Training and Development	2	2	Themes related to training and development within the company
Turbulence	11	13	Themes related to environmental turbulence

Appendix K-Sample Analytical Memo (AM 16)

AM16: This node contains contributions from participants whom make reference to the professional body and its relationship with same.

The respondents seem to have a predominantly negative perception of the contributions of the professional body based on the contents of this node. Some respondents were of the opinion that professional bodies needed to provide more comprehensive information to their members, deeming the information disseminated to member firms insufficient.

“I did ask for information before around pricing and I was told that, if you look at RIBA in the UK, RIBA will give you all the industry pricing breakdowns for what we should be quoting. We have no idea whether we’re competitive or not and that’s disgraceful. It’s disgraceful. They should have a cost analysis done for their members who are paying every year, because we don’t know what we’re paying for and we should have some guide.”- SA4

“So, I can’t at one level be expecting a lot from the professional body. Well, for example there, there was, you know, a significant change in the industry in terms of building regulations. And while the architectural institute would have done very well at communicating that and giving advice to members, the Society of Chartered Surveyors did very poorly in terms of communicating that. Also, in terms of the release of the new RCA forms and contract, very little communication and information in relation to that and much better in terms of what the architects institute make available.”-MQ1

“What’s amazing is the architects, architecture as a profession it’s all about like, I can’t ring, I can ring the RIAI but there are certain things they won’t speak to me about even though I am a director of a practice because I’m not an architect. There needs to be a commercial person and lots of people say to us the reason that we’re doing quite well as a practice is because there is a non-architect in the practice. I also think that the RIAI need to relax the rule around, so for example we set up as a company, Mr. R. had to take majority share because he was the registered architect which I totally disagree with. I think it’s actually negative because they don’t have any, under the Companies Act they have no commercial experience. And I think the RIAI are very exposed on that. I see the future of architecture, it needs to be not architects talking to architects. It is Architects speaking to people.”

In line with the professional body perceived to be distant to individual firms, one other challenge related to professional bodies is the overly technical focus of their training courses. Some respondents feel that the trainings are only technical and not focused on strategy or client focused issues.

“You know, my big bugbear is not one training course in the RIAI is non-technical....The CPDs are very focused and technical....It’s all rules and details.... should actually be to go out and deliver soft skill training. Emotional intelligence (training) for the architects which I think would be huge”

Other firms only see the professional body as a key information source.

“And we would, you know, go to seminars and all that so we try to keep ourselves

informed and liaise with industry collaborators and stuff, you know.” – **LE3**

“Competitor analysis; done on two different levels. We assessed top 10/20 people in the market and get such information from the ACEI”- **LE2**

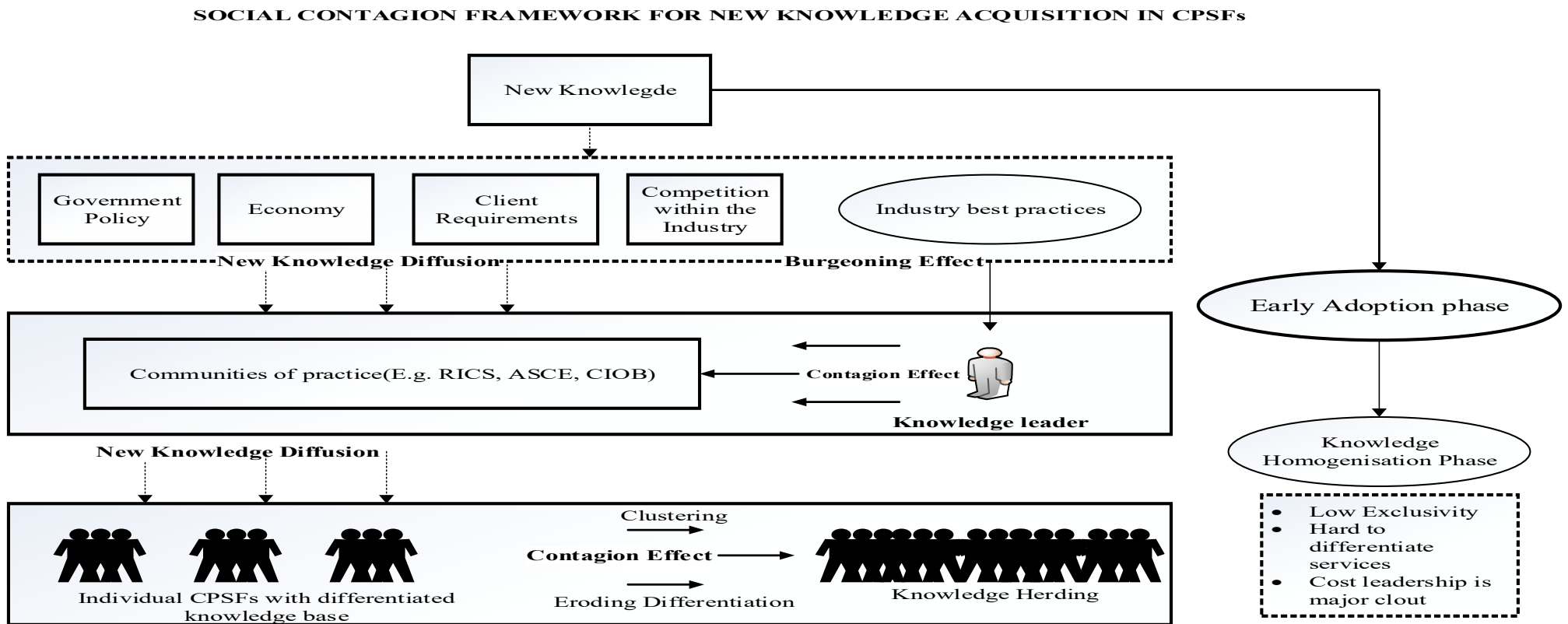
Other respondents view belonging to the professional body as an obligatory task, for ticking boxes, meeting client requirements for projects or for professional clout.

“It's (membership of the professional body) partly driven to be honest with you by client requirements.....they (clients) will specify that they need seven years' experience and they need to be a chartered engineer. So to tick those boxes and if you don't tick those boxes you're in the bin you need people to be chartered but it's a good objective anyway and it drives the CPD policy for those early years, which are critical.” –**LE4**

“We are an Engineers Ireland, CPD accredited company. Targets such as accreditations have to be maintained and improved upon in order to meet CPD accreditation requirements and staff development targets”- **LE5**

“Yeah, so it's a combination of things, a lot of our staff... well most of our staff are members of some professional institution. Like, I would be in the Society of Chartered Surveyors in Ireland. So they would have a CPD programme which we would be encouraged to attend and do. In addition, as I say, we also host a number of events ourselves. So there's that, and we sponsor various... some conferences and the like, which we will get free tickets to for staff and stuff like that.” – **LQ1**

Appendix L- Social Contagion Framework by Seriki & Murphy (2018)



Appendix M-Quantitative data on small firms

Respondent profile of small firms

	QS (%)	CE (%)	ARCH (%)
Respondent profile			
Managing Director/ CEO	79.63	82.35	64.45
Director	18.52	17.65	31.11
Associate director	0.00	0.00	3.33
Senior QS/C.Eng./Arch	1.85	0.00	1.11
Years of operation			
1-5 years	12.96	5.88	24.44
6-10 years	29.63	29.41	16.67
11-15 years	11.11	17.65	12.22
16-20 years	3.70	0.00	12.22
more than 20 years	42.59	47.06	34.44
Ownership structure			
Sole Practitioner	48.15	23.53	34.44
Partnership	0.00	17.65	6.67
Public Limited Company	38.89	29.41	0.00
Part of Global Consultancy	0.00	0.00	0.00
Private limited company	12.96	29.41	58.89

Key = Highest ranked

Approach to strategy, strategic types and risk attitude

	QS (%)	CE (%)	ARCH (%)
Approach to strategy			
Planned	24.07	13.33	9.88
Emergent	61.11	73.33	58.02
Internal resource driven	12.96	13.33	27.16
Technology driven	1.85	0.00	4.94
Strategic types			
Prospectors	12.96	12.50	7.41
Defenders	11.11	12.50	18.52
Analysers	35.19	6.25	33.33
Reactors	40.74	68.75	40.74
Risk Attitude			
Maximisers	20.37	31.25	4.88
Conservators	20.37	37.50	7.32
Managers	50.00	25.00	86.59
Pragmatists	9.26	6.25	1.22

Corporate, Business and Growth strategy

	QS	CE	ARCH
Corporate strategy			
Consolidation	44.44	43.75	30.12
Expansion	31.48	50.00	55.42
Rationalising	11.11	0.00	7.23
Combination	12.96	6.25	7.23
Business strategy			
Low-Cost	14.81	0.00	3.61
Differentiation	48.15	18.75	55.42
Focus	5.56	12.50	16.87
Cost-Focus	1.85	0.00	0.00
Differentiation-Focus	24.07	68.75	22.89
Cost-Differentiation	5.56	0.00	1.20
Stuck-in-the-middle	0.00	0.00	0.00
Growth strategy (Note: Total % of people who selected each option)			
Partnership	11.11	31.25	40.24
Acquisition	0.00	0.00	1.22
Mergers	9.26	18.75	12.20
International expansion	7.41	6.25	4.88

None of the above	77.78	62.50	56.10
-------------------	-------	-------	-------

Key

 = Highest ranked

--

 = Second highest ranked (Only used for growth strategy)

Small firms: Knowledge acquisition process, planning horizon/Characteristics

	QS	CE	ARCH
KA (Process)			
Planned	39.62	43.75	32.88
Emergent	24.53	56.25	39.73
No considerations/Industry driven	35.85	-	27.40
Planning horizon			
Annual	47.17	43.75	39.47
Biennial	5.66	0.00	13.16
Triennial	1.89	6.25	3.95
Quinquennial & above	0.00	0.00	2.64
Ad-hoc/As often as needed	45.28	50.00	40.79
*Planning characteristics (Note: Total of people who selected "Yes" to the option)			
Mission statement	-	56.25	52.00
Corporate objectives	-	31.25	29.73
Company vision statement	-	20.00	39.19
Annual performance reviews/Financial Plan / Targets	-	50.00	22.67
ISO Certification	-	31.25	53.33
Strategic planning models	-	18.75	2.70
Written strategic plan	5.66 ¹	25.00	12.00

Key

--

 = Highest ranked

¹ During the collection of data for QS firms, other planning characteristics methods had not been included in the survey, leading to null data except in the case of written plan

Appendix N-Quantitative data on Medium-sized firms

Respondent profile of medium enterprises

	QS (%)	CE (%)	ARCH (%)
Respondent profile			
Managing Director/ CEO	83.33	76.92	50.00
Director	16.67	23.08	36.36
Associate director	0.00	0.00	9.09
Senior QS/C.Eng./Arch	0.00	0.00	4.55
Years of operation			
1-5 years	0.00	7.69	4.55
6-10 years	16.67	7.69	4.55
11-15 years	16.67	7.69	13.64
16-20 years	16.67	0.00	0.00
more than 20 years	50.00	76.92	77.27
Ownership structure			
Sole Practitioner	0.00	0.00	0.00
Partnership	66.67	69.23	9.09
Public Limited Company	33.33	0.00	4.55
Part of Global Consultancy	0.00	7.69	0.00
Private limited company	0.00	23.08	86.36

Key = Highest ranked

Approach to strategy, strategic types and risk attitude

	QS (%)	CE (%)	ARCH (%)
Approach to strategy			
Planned	60.00	15.38	38.89
Emergent	40.00	76.92	55.56
Internal resource driven	0.00	7.69	5.56
Technology driven	0.00	0.00	0.00
Strategic types			
Prospectors	20.00	0.00	21.05
Defenders	20.00	38.46	42.11
Analysers	0.00	15.38	10.53
Reactors	60.00	46.15	26.32
Risk Attitude			
Maximisers	40.00	30.77	0.00
Conservators	20.00	23.08	5.56
Managers	40.00	46.15	88.89
Pragmatists	0.00	0.00	5.56

Key = Highest ranked

Corporate, Business and Growth strategy

	QS	CE	ARCH
Corporate strategy			
Consolidation	20.00	23.08	21.05
Expansion	60.00	76.92	57.89
Rationalising	0.00	0.00	5.26
Combination	20.00	0.00	15.79
Business strategy			
Low-Cost	20.00	0.00	5.26
Differentiation	80.00	23.08	42.11
Focus	0.00	7.69	10.53
Cost-Focus	0.00	0.00	5.26
Differentiation-Focus	0.00	69.23	31.58
Cost-Differentiation	0.00	0.00	5.26
Stuck-in-the-middle	0.00	0.00	0.00

Growth strategy (Note: Total % of people who selected each option)

Partnership	0.00	53.85	57.89
Acquisition	0.00	7.69	5.26
Mergers	0.00	7.69	10.53
International expansion	40.00	38.46	10.53
None of the above	60.00	23.08	36.84

Key = Highest ranked

= Second highest ranked (Only used for growth strategy)

Medium enterprises: KA process, planning horizon/Characteristics

	QS	CE	ARCH
KA (Process)			
Planned	20.00	30.77	47.06
Emergent	80.00	69.23	29.41
No considerations/Industry driven	0.00	-	23.53
Planning horizon			
Annual	40.00	46.15	47.06
Biennial	20.00	7.69	5.88
Triennial	20.00	15.38	5.88
Quinquennial & above	0.00	7.69	11.76
Ad-hoc/As often as needed	20.00	23.08	29.41
Planning characteristics (Note: Total of people who selected "Yes" to the option)			
Mission statement	-	66.67	70.59
Corporate objectives	-	76.92	58.82
Company vision statement	-	53.85	64.71
Annual performance reviews/Financial Plan / Targets	-	46.15	31.25
ISO Certification	-	69.23	64.71
Strategic planning models	-	50.00	62.5
Written strategic plan	40.00 ²	38.46	31.25

Key = Highest ranked

² During the collection of data for QS firms, other planning characteristics methods had not been included in the survey, leading to null data except in the case of written plan.

Appendix O-Quantitative data on Large-sized firms

Respondent profile of large enterprises

	QS (%)	CE (%)	ARCH (%)
Respondent profile			
Managing Director/ CEO	16.67	76.92	100.00
Director	33.33	22.97	0.00
Associate director	50.00	0.00	0.00
Senior QS/C.Eng./Arch	0.00	0.00	0.00
Years of operation			
1-5 years	0.00	0.00	0.00
6-10 years	0.00	0.00	0.00
11-15 years	16.67	0.00	0.00
16-20 years	0.00	0.00	0.00
more than 20 years	83.33	100.00	100.00
Ownership structure			
Sole Practitioner	0.00	0.00	0.00
Partnership	0.00	30.77	0.00
Public Limited Company	0.00	23.08	0.00
Part of Global Consultancy	66.67	15.38	0.00
Private limited company	33.33	30.77	100.00

Key = Highest ranked

Approach to strategy, strategic types and risk attitude

	QS (%)	CE (%)	ARCH (%)
Approach to strategy			
Planned	100.00	61.54	75.00
Emergent	0.00	30.77	25.00
Internal resource driven	0.00	7.69	0.00
Technology driven	0.00	0.00	0.00
Strategic types			
Prospectors	50.00	7.69	0.00
Defenders	50.00	76.92	100.00
Analysers	0.00	15.38	0.00
Reactors	0.00	0.00	0.00
Risk Attitude			
Maximisers	66.67	46.15	25.00
Conservators	0.00	23.08	0.00
Managers	33.33	30.77	75.00
Pragmatists	0.00	0.00	0.00

Key = Highest ranked

Corporate, Business and Growth strategy

	QS*	CE	ARCH
Corporate strategy			
Consolidation	16.67	15.38	0.00
Expansion	66.67	76.92	100.00
Rationalising	0.00	0.00	0.00
Combination	16.66	7.69	0.00
Business strategy			
Low-Cost	0.00	0.00	0.00
Differentiation	100.00	15.38	100.00
Focus	0.00	0.00	0.00
Cost-Focus	0.00	0.00	0.00
Differentiation-Focus	0.00	75.53	0.00
Cost-Differentiation	0.00	0.00	0.00
Stuck-in-the-middle	0.00	9.09	0.00
Growth strategy (Note: Total % of people who selected each option)			
Partnership	0.00	46.15	50.00

Acquisition	16.67	0.00	0.00
Mergers	0.00	0.00	0.00
International expansion	83.33	53.85	50.00
None of the above	16.67	30.77	25.00

Large enterprises: KA process, planning horizon/Characteristics

	QS	CE	ARCH
KA (Process)			
Planned	83.33	54.55	25.00
Emergent	16.67	45.45	75.00
No considerations/Industry driven	0.00	-	0.00
Planning horizon			
Annual	50.00	30.77	25.00
Biennial	0.00	23.08	0.00
Triennial	0.00	7.69	25.00
Quinquennial & above	16.67	23.08	0.00
Ad-hoc/As often as needed	33.33	15.38	50.00
Planning characteristics (Note: Total of people who selected "Yes" to the option)			
Mission statement	-	84.62	100.00
Corporate objectives	-	84.62	75.00
Company vision statement	-	92.31	100.00
Financial Plan / Targets	-	100.00	100.00
ISO Certification	-	100.00	75.00
Strategic planning models	-	76.92	100.00
Written strategic plan	83.33*	76.92	100.00

Key = Highest ranked

Appendix P-Quantitative data on Sole proprietorships

Respondent profile of Sole proprietorship firms

	QS (%)	CE (%)	ARCH (%)
Respondent profile			
Managing Director/ CEO	88.46	75.00	83.87
Director	7.69	25.00	12.90
Associate director	0.00	0.00	0.00
Senior QS/C.Eng./Arch	3.85	0.00	3.23
Firm age			
1-5 years	19.23	0.00	9.68
6-10 years	23.08	0.00	25.81
11-15 years	7.69	0.00	16.13
16-20 years	3.85	0.00	3.23
more than 20 years	46.15	100.00	45.16
Firm size			
Small firm	100.00	100.00	100.00
Medium sized firm	0.00	0.00	0.00
Large enterprise	0.00	0.00	0.00

Key = Highest ranked

Approach to strategy, strategic types and risk attitude

	QS (%)	CE (%)	ARCH (%)
Approach to strategy			
Planned	23.08	0.00	7.41
Emergent	61.54	100.00	37.04
Internal resource driven	11.54	0.00	48.15
Technology driven	3.85	0.00	7.41
Strategic types			
Prospectors	11.54	0.00	7.41
Defenders	15.38	0.00	11.11
Analysers	30.77	0.00	29.63
Reactors	42.31	100.00	51.85
Risk Attitude			
Maximisers	23.08	0.00	3.70
Conservators	26.92	75.00	14.81
Managers	42.31	25.00	77.78
Pragmatists	7.69	0.00	3.70

Key = Highest ranked

Corporate, Business and Growth strategy

	QS	CE	ARCH
Corporate strategy			
Consolidation	57.69	75.00	40.74
Expansion	26.92	25.00	37.04
Rationalising	11.54	0.00	11.11
Combination	3.85	0.00	11.11
Business strategy			
Low-Cost	19.23	0.00	7.41
Differentiation	50.00	0.00	48.15
Focus	7.69	50.00	18.52
Cost-Focus	3.85	0.00	3.70
Differentiation-Focus	15.39	50.00	22.22
Cost-Differentiation	3.85	0.00	0.00
Stuck-in-the-middle	0.00	0.00	0.00
Growth strategy (Note: Total % of people who selected each option)			
Partnership	15.38	25.00	25.93
Acquisition	0.00	0.00	0.00
Mergers	15.38	25.00	18.52

International expansion	7.69	0.00	7.41
None of the above	69.23	75.00	66.67

Sole ownership firms: KA process, planning horizon/Characteristics

	QS	CE	ARCH
KA (Process)			
Planned	48.00	50.00	25.00
Emergent	8.00	50.00	41.67
No considerations/Industry driven	44.00	-	33.33
Planning horizon			
Annual	52.00	25.00	32.00
Biennial	8.00	0.00	16.00
Triennial	0.00	0.00	4.00
Quinquennial & above	0.00	0.00	0.00
Ad-hoc/As often as needed	40.00	75.00	48.00
Planning characteristics (Note: Total of people who selected "Yes" to the option)			
Mission statement	-	50.00	25.00
Corporate objectives	-	0.00	12.50
Company vision statement	-	25.00	12.50
Annual performance reviews/Financial Plan / Targets	-	50.00	36.00
ISO Certification	-	50.00	0.00
Strategic planning models	-	25.00	8.33
Written strategic plan	4.00*	50.00	12.50

Key = Highest ranked

Appendix Q-Quantitative data on Partnerships

Demography of respondents' organisations (Partnerships)

	QS (%)	CE (%)	ARCH (%)
Respondent profile			
Managing Director/ CEO	75.00	75.00	12.50
Director	25.00	25.00	37.50
Associate director	0.00	0.00	50.00
Senior QS/C.Eng./Arch	0.00	0.00	0.00
Firm age			
1-5 years	0.00	6.25	25.00
6-10 years	25.00	12.50	12.50
11-15 years	0.00	12.50	37.50
16-20 years	25.00	0.00	12.50
more than 20 years	50.00	68.75	12.50
Firm size			
Small firm	0.00	18.75	75.00
Medium firm	100.00	56.25	25.00
Large enterprise	0.00	25.00	0.00

Key = Highest ranked

Approach to strategy, strategic types and risk attitudes of partnerships

	QS (%)	CE (%)	ARCH (%)
Approach to strategy			
Planned	50.00	12.50	0.00
Emergent	50.00	75.00	100.00
Internal resource driven	0.00	12.50	0.00
Technology driven	0.00	0.00	0.00
Strategic types			
Prospectors	0.00	0.00	0.00
Defenders	25.00	43.75	42.86
Analysers	0.00	6.25	28.57
Reactors	75.00	50.00	28.57
Risk Attitude			
Maximisers	50.00	37.50	0.00
Conservators	25.00	18.75	0.00
Managers	25.00	37.50	100.00
Pragmatists	0.00	6.25	0.00

Key = Highest ranked

Approach to strategy, strategic types and risk attitudes of partnerships

	QS	CE	ARCH
Corporate strategy			
Consolidation	25.00	43.75	14.29
Expansion	50.00	56.25	71.43
Rationalising	0.00	0.00	0.00
Combination	25.00	0.00	14.29
Business strategy			
Low-Cost	25.00	0.00	0.00
Differentiation	75.00	18.75	57.14
Focus	0.00	6.25	0.00
Cost-Focus	0.00	0.00	0.00
Differentiation-Focus	0.00	75.00	42.86
Cost-Differentiation	0.00	0.00	0.00
Stuck-in-the-middle	0.00	0.00	0.00
Growth strategy (Note: Total % of people who selected each option)			
Partnership	0.00	56.25	85.71

Acquisition	0.00	6.25	14.29
Mergers	0.00	18.75	0.00
International expansion	25.00	25.00	0.00
None of the above	75.00	25.00	14.29
KA process, planning horizon and planning characteristics of partnerships			
	QS	CE	ARCH
KA (Process)			
Planned	48.00	43.75	0.00
Emergent	8.00	56.25	71.43
No considerations/Industry driven	44.00	-	28.57
Planning horizon			
Annual	25.00	43.75	71.43
Biennial	25.00	12.50	0.00
Triennial	25.00	12.50	0.00
Quinquennial & above	0.00	13.50	0.00
Ad-hoc/As often as needed	25.00	18.75	28.57
Planning characteristics (Note: Total of people who selected "Yes" to the option)			
Mission statement	-	73.33	42.86
Corporate objectives	-	62.50	42.86
Company vision statement	-	62.50	42.86
Financial Plan / Targets	-	46.67	14.29
ISO Certification	-	62.50	14.29
Strategic planning models	-	40.00	42.86
Written strategic plan	25.00*	43.75	42.86
Key	<input type="checkbox"/>	= Highest ranked	

Appendix R-Quantitative data on public limited companies

Demography of respondents' organisations (Public limited firms)

	QS (%)	CE (%)	ARCH ³ (%)
Respondent profile			
Managing Director/ CEO	65.22	87.50	0.00
Director	34.78	12.50	100.00
Associate director	0.00	0.00	0.00
Senior QS/C.Eng./Arch	0.00	0.00	0.00
Firm age			
1-5 years	8.70	0.00	100.00
6-10 years	34.78	25.00	0.00
11-15 years	13.04	12.50	0.00
16-20 years	4.35	0.00	0.00
more than 20 years	39.13	62.50	0.00
Firm size			
Small firm	91.30	62.50	0.00
Medium firm	8.70	0.00	100.00
Large enterprise	0.00	37.50	0.00

Approach to strategy, strategic types and risk attitudes (PLCs)

	QS (%)	CE (%)	ARCH (%)
Approach to strategy			
Planned	36.36	28.57	0.00
Emergent	50.00	42.86	100.00
Internal resource driven	13.64	28.57	0.00
Technology driven	0.00	0.00	0.00
Strategic types			
Prospectors	13.64	14.29	0.00
Defenders	9.09	0.00	0.00
Analysers	36.36	28.57	0.00
Reactors	40.91	57.14	100.00
Risk Attitude			
Maximisers	18.18	14.29	0.00
Conservators	13.64	28.57	0.00
Managers	59.09	57.14	100.00
Pragmatists	9.09	0.00	0.00

Key = Highest ranked

Corporate strategy, strategic types and risk attitudes of public limited companies

	QS	CE	ARCH
Corporate strategy			
Consolidation	31.82	14.29	0.00
Expansion	40.91	85.71	100.00
Rationalising	9.09	0.00	0.00
Combination	18.18	0.00	0.00
Business strategy			
Low-Cost	13.64	0.00	0.00
Differentiation	50.00	28.57	100.00
Focus	4.55	0.00	0.00
Cost-Focus	0.00	0.00	0.00
Differentiation-Focus	27.27	71.43	0.00
Cost-Differentiation	4.55	0.00	0.00
Stuck-in-the-middle	0.00	0.00	0.00
Growth strategy (Note: Total % of people who selected each option)			
Partnership	9.09	42.86	100.00

³ Data contains only one respondent and may not fully represent entire views of ARCH

Acquisition	0.00	0.00	0.00
Mergers	4.55	0.00	0.00
International expansion	9.09	28.57	0.00
None of the above	81.82	42.86	0.00
KA process, planning horizon and planning characteristics of public limited companies			
	QS	CE	ARCH
KA (Process)			
Planned	36.37	28.57	0.00
Emergent	36.37	71.43	0.00
No considerations/Industry driven	27.27	-	100.00
Planning horizon			
Annual	45.45	42.86	100.00
Biennial	4.55	14.29	0.00
Triennial	4.55	0.00	0.00
Quinquennial & above	0.00	14.29	0.00
Ad-hoc/As often as needed	45.45	28.57	0.00
Planning characteristics (Note: Total of people who selected "Yes" to the option)			
Mission statement	-	57.14	100.00
Corporate objectives	-	57.14	0.00
Company vision statement	-	42.86	100.00
Annual performance review/Financial Plan / Targets	-	57.14	100.00
ISO Certification	-	57.14	0.00
Strategic planning models	-	42.86	0.00
Written strategic plan	13.64*	28.57	0.00
Key	= Highest ranked		

Appendix S- Quantitative data on Private limited firms

Demographic data of respondents' organisations (Private limited firms)

	QS (%)	CE (%)	ARCH (%)
Respondent profile			
Managing Director/ CEO	88.89	83.33	59.21
Director	11.11	16.67	38.16
Associate director	0.00	0.00	1.32
Senior QS/C.Eng./Arch	0.00	0.00	1.32
Firm age			
1-5 years	0.00	8.33	22.37
6-10 years	22.22	16.67	9.21
11-15 years	22.22	8.33	7.89
16-20 years	0.00	0.00	11.84
more than 20 years	55.56	66.67	48.68
Firm size			
Small firm	77.78	41.67	69.74
Medium firm	0.00	25.00	25.00
Large enterprise	22.22	33.33	5.26

Key = Highest ranked

Approach to strategy, strategic types and risk attitudes of private limited firms

	QS (%)	CE (%)	ARCH (%)
Approach to strategy			
Planned	22.22	58.33	23.53
Emergent	66.67	41.67	58.82
Internal resource driven	11.11	0.00	14.71
Technology driven	0.00	0.00	2.94
Strategic types			
Prospectors	22.22	16.67	11.59
Defenders	22.22	58.33	30.43
Analysers	33.33	16.67	27.54
Reactors	22.22	8.33	30.43
Risk Attitude			
Maximisers	33.33	58.33	5.80
Conservators	11.11	33.33	4.35
Managers	44.44	8.33	88.41
Pragmatists	11.11	0.00	1.45

Key = Highest ranked

Approach to strategy, strategic types and risk attitudes of private limited firms

	QS	CE	ARCH
Corporate strategy			
Consolidation	22.22	8.33	23.94
Expansion	33.33	83.33	59.16
Rationalising	11.11	0.00	5.63
Combination	33.33	8.33	11.27
Business strategy			
Low-Cost	0.00	0.00	2.86
Differentiation	55.56	25.00	55.71
Focus	0.00	0.00	15.71
Cost-Focus	0.00	0.00	1.43
Differentiation-Focus	33.33	66.67	22.86
Cost-Differentiation	11.11	0.00	1.43
Stuck-in-the-middle	0.00	8.33	0.00
Growth strategy (Note: Total % of people who selected each option)			
Partnership	0.00	41.67	45.71
Acquisition	0.00	0.00	1.43

Mergers	0.00	0.00	10.00
International expansion	33.33	41.67	8.57
None of the above	66.67	50.00	50.00

KA process, planning horizon and planning characteristics of private limited firms

	QS	CE	ARCH
KA (Process)			
Planned	33.33	50.00	43.55
Emergent	44.44	50.00	35.48
No considerations/Industry driven	22.22	-	20.97
Planning horizon			
Annual	33.33	41.67	39.06
Biennial	0.00	0.00	10.94
Triennial	0.00	8.33	6.25
Quinquennial & above	11.11	8.33	4.69
Ad-hoc/As often as needed	55.56	41.67	39.06
Planning characteristics (Note: Total of people who selected "Yes" to the option)			
Mission statement	-	66.67	70.31
Corporate objectives	-	75.00	46.03
Company vision statement	-	45.45	58.73
Annual performance review/Financial Plan / Targets	-	83.33	66.67
ISO Certification	-	66.67	24.19
Strategic planning models	-	50.00	22.22
Written strategic plan	11.11*	41.67	31.75

Key = Highest ranked

Appendix T-Quantitative data on firms who are part of Global Consortium

Demographic data of respondents' organisations (GC Firms)

	QS (%)	CE (%)	ARCH ⁴ (%)
Respondent profile			
Managing Director/ CEO	0.00	66.67	-
Director	25.00	33.33	-
Associate director	75.00	0.00	-
Senior QS/C.Eng./Arch	0.00	0.00	-
Firm age			
1-5 years	0.00	0.00	-
6-10 years	0.00	0.00	-
11-15 years	25.00	0.00	-
16-20 years	0.00	0.00	-
more than 20 years	75.00	100.00	-
Firm size			
Small firm	0.00	0.00	-
Medium firm	0.00	33.33	-
Large enterprise	100.00	66.67	-

Key = Highest ranked

Approach to strategy, strategic types and risk attitudes of GC firms

	QS (%)	CE (%)	ARCH (%)
Approach to strategy			
Planned	100.00	33.33	-
Emergent	0.00	66.67	-
Internal resource driven	0.00	0.00	-
Technology driven	0.00	0.00	-
Strategic types			
Prospectors	75.00	0.00	-
Defenders	25.00	100.00	-
Analysers	0.00	0.00	-
Reactors	0.00	0.00	-
Risk Attitude			
Maximisers	50.00	33.33	-
Conservators	0.00	0.00	-
Managers	50.00	66.67	-
Pragmatists	0.00	0.00	-

Approach to strategy, strategic types and risk attitudes of GC firms

	QS	CE	ARCH
Corporate strategy			
Consolidation	25.00	0.00	-
Expansion	75.00	66.67	-
Rationalising	0.00	0.00	-
Combination	0.00	33.33	-
Business strategy			
Low-Cost	0.00	0.00	-
Differentiation	100.00	0.00	-
Focus	0.00	0.00	-
Cost-Focus	0.00	0.00	-
Differentiation-Focus	0.00	100.00	-
Cost-Differentiation	0.00	0.00	-
Stuck-in-the-middle	0.00	0.00	-
Growth strategy (Note: Total % of people who selected each option)			
Partnership	0.00	0.00	-

⁴ Architectural firms data missing as none of the respondents firms fall within this category

Acquisition	25.00	0.00	-
Mergers	0.00	0.00	-
International expansion	75.00	66.67	-
None of the above	25.00	33.33	-
KA process, planning horizon and planning characteristics of GC firms			
	QS	CE	ARCH
KA (Process)			
Planned	100.00	66.67	-
Emergent	0.00	33.33	-
No considerations/Industry driven	0.00	-	-
Planning horizon			
Annual	75.00	33.33	-
Biennial	0.00	33.33	-
Triennial	0.00	33.33	-
Quinquennial & above	0.00	0.00	-
Ad-hoc/As often as needed	25.00	0.00	-
Planning characteristics (Note: Total of people who selected "Yes" to the option)			
Mission statement	-	100.00	-
Corporate objectives	-	100.00	-
Company vision statement	-	100.00	-
Financial Plan / Targets	-	100.00	-
ISO Certification	-	100.00	-
Strategic planning models	-	100.00	-
Written strategic plan	100.00*	100.00	-
Key	☐ = Highest ranked		

Appendix U-Quantitative data on firms < 5 years of age

Respondent profile of firms < 5 years old (recovery/stability)

	QS (%)	CE (%)	ARCH (%)
Respondent profile			
Managing Director/ CEO	85.71	50.00	52.17
Director	14.29	50.00	39.13
Associate director/Partner	0.00	0.00	8.70
Senior QS/C.Eng./Arch	0.00	0.00	0.00
Ownership structure			
Sole proprietorship	71.43	0.00	13.04
Partnership	0.00	50.00	8.70
Public limited company	28.57	0.00	4.35
Part of global consortium	0.00	0.00	0.00
Private limited company	0.00	50.00	73.91
Firm size			
Small firms	100.00	50.00	95.65
Medium firm	0.00	50.00	4.35
Large enterprise	0.00	0.00	0.00

Key = Highest ranked

Approach to strategy, strategic types and risk attitude

	QS (%)	CE (%)	ARCH (%)
Approach to strategy			
Planned	42.86	0.00	14.29
Emergent	57.14	100.00	61.90
Internal resource driven	0.00	0.00	23.81
Technologically driven	0.00	0.00	0.00
Strategic types			
Prospectors	28.57	0.00	15.00
Defenders	0.00	0.00	5.00
Analysers	42.86	50.00	30.00
Reactors	28.57	50.00	50.00
Risk Attitude			
Maximisers	28.57	100.00	9.52
Conservators	0.00	0.00	9.52
Managers	42.86	0.00	80.95
Pragmatists	28.57	0.00	0.00

Key = Highest ranked

Corporate, Business and Growth strategy

	QS	CE	ARCH
Corporate strategy			
Consolidation	57.14	0.00	4.76
Expansion	28.57	100.00	90.48
Rationalising	0.00	0.00	0.00
Combination	14.29	0.00	4.76
Business strategy			
Low-Cost	14.29	0.00	0.00
Differentiation	57.14	100.00	61.90
Focus	0.00	0.00	14.29
Cost-Focus	0.00	0.00	0.00
Differentiation-Focus	28.57	0.00	23.81
Cost-Differentiation	0.00	0.00	0.00
Stuck-in-the-middle	0.00	0.00	0.00
Growth strategy (Note: Total % of people who selected each option)			
Partnership	28.57	50.00	52.38
Acquisition	0.00	0.00	4.76
Mergers	14.29	0.00	4.76

International expansion	28.57	0.00	0.00
None of the above	57.14	50.00	47.62

Firms less than 5 years old: KA process, planning horizon/Characteristics

	QS	CE	ARCH
KA (Process)			
Planned	42.86	50.00	29.41
Emergent	14.28	50.00	41.18
No considerations/Industry driven	42.86	-	29.41
Planning horizon			
Annual	42.86	0.00	55.56
Biennial	0.00	0.00	0.00
Triennial	0.00	0.00	5.56
Quinquennial & above	0.00	50.00	0.00
Ad-hoc/As often as needed	57.14	50.00	38.89
Planning characteristics (Note: Total of people who selected "Yes" to the option)			
Mission statement	-	50.00	77.78
Corporate objectives	-	0.00	41.18
Company vision statement	-	0.00	64.71
Financial Plan / Targets	-	100.00	58.82
ISO Certification	-	0.00	0.00
Strategic planning models	-	0.00	22.22
Written strategic plan	14.29*	0.00	38.89

Appendix V-Quantitative data on firms aged between 6-10 years

Respondent profile of firms aged between six and ten years

	QS (%)	CE (%)	ARCH (%)
Respondent profile			
Managing Director/ CEO	82.35	66.67	68.75
Director	17.65	33.33	25.00
Associate director	0.00	0.00	6.25
Senior QS/C.Eng./Arch	0.00	0.00	0.00
Ownership structure			
Sole proprietorship	35.29	0.00	50.00
Partnership	5.88	33.33	6.25
Public limited company	47.06	33.33	0.00
Part of global consortium	0.00	0.00	0.00
Private limited company	11.76	33.33	43.75
Firm size			
Small firm	94.12	83.33	93.75
Medium firm	5.88	16.67	6.25
Large enterprise	0.00	0.00	0.00

Key = Highest ranked

Approach to strategy, strategic types and risk attitude

	QS (%)	CE (%)	ARCH (%)
Approach to strategy			
Planned	29.41	16.67	15.38
Emergent	41.18	50.00	53.85
Internal resource driven	29.41	33.33	30.77
Technology drive	0.00	0.00	0.00
Strategic types			
Prospectors	5.88	16.67	14.29
Defenders	17.65	33.33	14.29
Analysers	35.29	0.00	35.71
Reactors	41.18	50.00	35.71
Risk Attitude			
Maximisers	23.53	33.33	7.14
Conservators	17.65	33.33	0.00
Managers	47.06	16.67	85.71
Pragmatists	11.76	16.67	7.14

Corporate, Business and Growth strategy

	QS	CE	ARCH
Corporate strategy			
Consolidation	35.29	50.00	21.43
Expansion	52.94	33.33	57.14
Rationalising	5.88	0.00	0.00
Combination	5.88	16.67	21.43
Business strategy			
Low-Cost	11.76	0.00	0.00
Differentiation	52.94	33.33	50.00
Focus	5.88	0.00	28.57
Cost-Focus	5.88	0.00	0.00
Differentiation-Focus	17.65	66.67	21.43
Cost-Differentiation	5.88	0.00	0.00
Stuck-in-the-middle	0.00	0.00	0.00
Growth strategy (Note: Total % of people who selected each option)			
Partnership	5.88	50.00	42.86
Acquisition	0.00	0.00	0.00
Mergers	5.88	0.00	21.43

International expansion	11.76	16.67	0.00
None of the above	76.47	50.00	57.14

Survivors: KA process, planning horizon/Characteristics

	QS	CE	ARCH
KA (Process)			
Planned	43.75	33.33	15.38
Emergent	25.00	66.67	30.77
No considerations/Industry driven	31.25	-	53.85
Planning horizon			
Annual	56.25	50.00	46.15
Biennial	6.25	0.00	15.38
Triennial	0.00	0.00	7.69
Quinquennial & above	0.00	0.00	0.00
Ad-hoc/As often as needed	37.50	50.00	30.77
Planning characteristics (Note: Total of people who selected "Yes" to the option)			
Mission statement	-	50.00	61.54
Corporate objectives	-	33.33	30.77
Company vision statement	-	20.00	30.77
Financial Plan / Targets	-	50.00	46.15
ISO Certification	-	16.67	0.00
Strategic planning models	-	16.67	15.38
Written strategic plan	6.25	16.67	30.77

Appendix W-Quantitative data on firms aged 11-15 years

Respondent profile of firms established during the peak

	QS (%)	CE (%)	ARCH (%)
Respondent profile			
Managing Director/ CEO	62.50	100.00	64.29
Director	25.00	0.00	28.57
Associate director	12.50	0.00	7.14
Senior QS/C.Eng./Arch	0.00	0.00	0.00
Ownership structure			
Sole proprietorship	25.00	0.00	35.71
Partnership	0.00	50.00	21.43
Public limited company	37.50	25.00	0.00
Part of global consortium	12.50	0.00	0.00
Private limited company	25.00	25.00	42.86
Firm size			
Small firm	75.00	75.00	78.57
Medium firm	12.50	25.00	21.43
Large enterprise	12.50	0.00	0.00

Key = Highest ranked

Approach to strategy, strategic types and risk attitude

	QS (%)	CE (%)	ARCH (%)
Approach to strategy			
Planned	14.29	25.00	8.33
Emergent	85.71	50.00	66.67
Internal resource driven	0.00	25.00	25.00
Technology driven	0.00	0.00	0.00
Strategic types			
Prospectors	28.57	0.00	0.00
Defenders	0.00	25.00	33.33
Analysers	28.57	0.00	25.00
Reactors	42.86	75.00	41.67
Risk Attitude			
Maximisers	57.14	25.00	0.00
Conservators	0.00	25.00	0.00
Managers	28.57	50.00	91.67
Pragmatists	14.29	0.00	8.33

Corporate, Business and Growth strategy

	QS	CE	ARCH
Corporate strategy			
Consolidation	14.29	50.00	50.00
Expansion	57.14	50.00	50.00
Rationalising	0.00	0.00	0.00
Combination	28.57	0.00	0.00
Business strategy			
Low-Cost	14.29	0.00	8.33
Differentiation	57.14	25.00	66.67
Focus	0.00	0.00	8.33
Cost-Focus	0.00	0.00	0.00
Differentiation-Focus	28.57	75.00	16.67
Cost-Differentiation	0.00	0.00	0.00
Stuck-in-the-middle	0.00	0.00	0.00
Growth strategy (Note: Total % of people who selected each option)			
Partnership	14.29	50.00	50.00
Acquisition	14.29	0.00	0.00
Mergers	0.00	25.00	25.00

International expansion	14.29	25.00	8.33
None of the above	71.43	50.00	41.67

Firms established during peak: KA process, planning horizon/Characteristics

	QS	CE	ARCH
KA (Process)			
Planned	42.86	50.00	33.33
Emergent	28.57	50.00	33.33
No considerations/Industry driven	28.57	-	33.33
Planning horizon			
Annual	71.43	50.00	25.00
Biennial	14.29	0.00	16.67
Triennial	0.00	25.00	8.33
Quinquennial & above	0.00	0.00	16.66
Ad-hoc/As often as needed	14.29	25.00	33.33
Planning characteristics (Note: Total of people who selected "Yes" to the option)			
Mission statement	-	75.00	27.27
Corporate objectives	-	75.00	16.67
Company vision statement	-	75.00	33.33
Financial Plan / Targets	-	25.00	50.00
ISO Certification	-	50.00	0.00
Strategic planning models	-	25.00	0.00
Written strategic plan	14.29	50.00	25.00

Key = Highest ranked

Appendix X-Quantitative data on firms aged above 15 years

Respondent profile of firms created during the Celtic tiger years

	QS (%)	CE (%)	ARCH (%)
Respondent profile			
Managing Director/ CEO	70.97	80.65	67.30
Director	19.35	19.36	26.92
Associate director	6.45	0.00	1.92
Senior QS/C.Eng./Arch	3.23	0.00	3.85
Ownership structure			
Sole proprietorship	38.71	12.90	26.92
Partnership	6.45	35.48	1.92
Public limited company	29.03	16.13	0.00
Part of global consortium	9.68	9.68	0.00
Private limited company	16.13	25.81	71.15
Firm size			
Small firm	74.19	25.81	59.62
Medium firm	9.68	32.26	32.69
Large enterprise	16.13	41.93	7.69

Key = Highest ranked

Approach to strategy, strategic types and risk attitude

	QS (%)	CE (%)	ARCH (%)
Approach to strategy			
Planned	38.71	34.48	21.74
Emergent	54.84	62.07	47.83
Internal resource driven	3.23	3.45	21.74
Technology driven	3.23	0.00	8.70
Strategic types			
Prospectors	19.35	6.67	10.64
Defenders	19.35	46.67	36.17
Analysers	25.81	13.33	25.53
Reactors	35.48	33.33	27.66
Risk Attitude			
Maximisers	22.58	33.33	4.35
Conservators	25.81	30.00	10.87
Managers	51.61	36.67	84.78
Pragmatists	0.00	0.00	0.00

Corporate, Business and Growth strategy

	QS	CE	ARCH
Corporate strategy			
Consolidation	41.94	23.33	33.33
Expansion	29.03	73.33	37.50
Rationalising	16.13	0.00	12.50
Combination	12.90	3.33	16.67
Business strategy			
Low-Cost	9.68	0.00	6.38
Differentiation	58.06	10.00	51.06
Focus	6.45	10.00	12.77
Cost-Focus	9.68	0.00	2.13
Differentiation-Focus	16.13	80.00	23.40
Cost-Differentiation	0.00	0.00	4.26
Stuck-in-the-middle	0.00	0.00	0.00

Growth strategy (Note: Total % of people who selected each option)

Partnership	6.45	40.00	40.43
Acquisition	0.00	3.33	2.13
Mergers	6.45	10.00	10.64

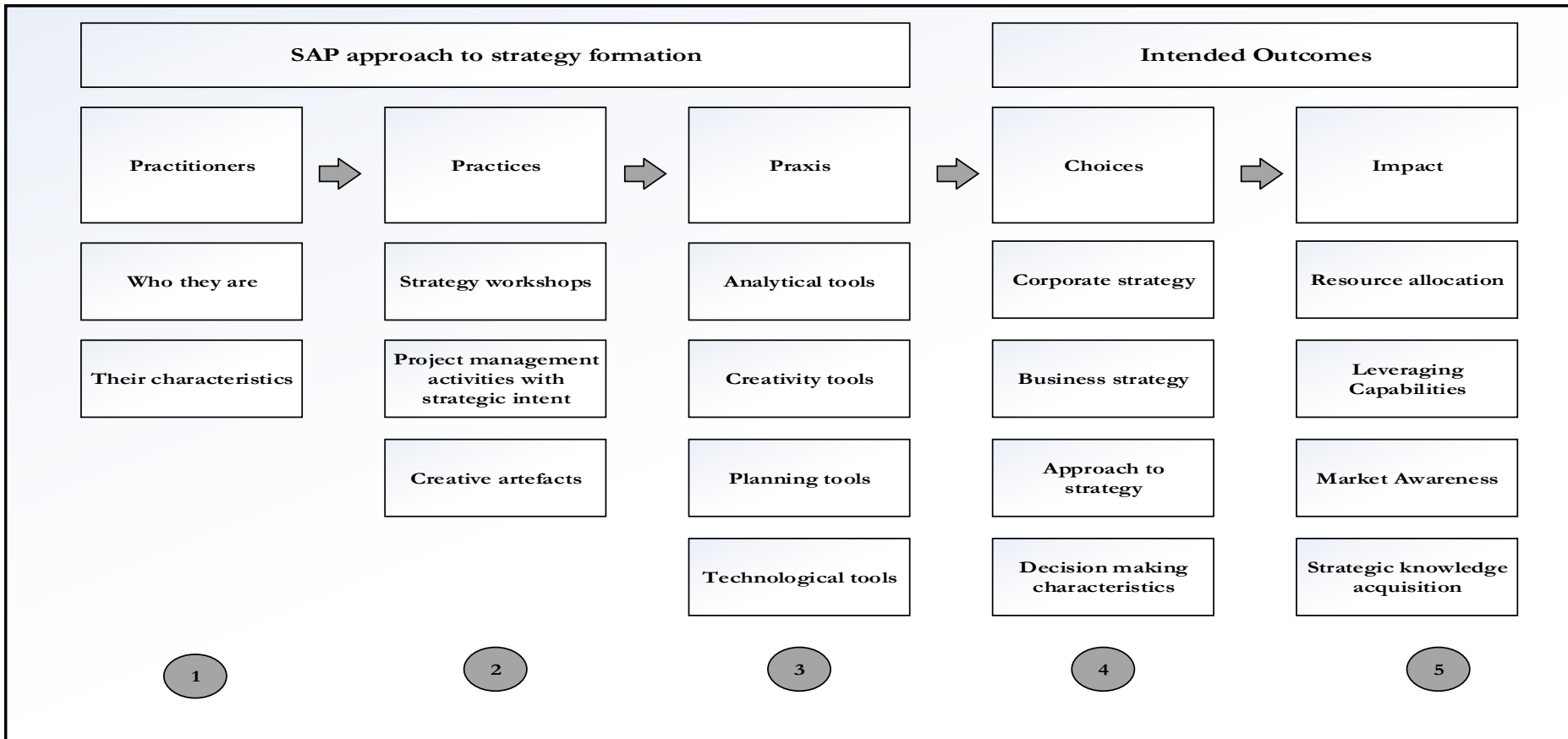
International expansion	19.35	36.67	14.89
None of the above	70.97	36.67	51.06

Key = Highest ranked

Celtic tiger enterprises: KA process, planning horizon/Characteristics

	QS	CE	ARCH
KA (Process)			
Planned	41.93	46.67	41.86
Emergent	32.26	53.33	41.86
No considerations/Industry driven	25.81	-	16.28
Planning horizon			
Annual	38.71	40.00	34.09
Biennial	3.23	13.33	11.36
Triennial	6.45	10.00	4.55
Quinquennial & above	3.23	10.00	4.54
Ad-hoc/As often as needed	48.39	26.67	45.45
Planning characteristics (Note: Total of people who selected "Yes" to the option)			
Mission statement	-	72.41	56.82
Corporate objectives	-	70.00	44.19
Company vision statement	-	60.00	46.51
Financial Plan / Targets	-	68.97	59.09
ISO Certification	-	80.00	34.88
Strategic planning models	-	58.62	23.26
Written strategic plan	22.58	53.33	26.19

Appendix Y- Augmented SAP framework for strategy formulation



Extended Augmented framework guide

Practitioners (who is involved in strategic decision making)	Practices (what actions/activities do they do?)	Praxis (what tools do they use in reaching decisions?)	Choices they select (strategic options available after going through the preceding steps)	Impact (Expected outcome of strategic decisions adopted)
Who they are: Board members Directors Project managers Partners Non-technical executives Mid-level managers Junior managers	Strategy workshops: Management Away days (MAD) Vision setting meetings Continuous professional Development (CPD) Industry Analysis Rituals and routines within the company	Analytical tools SWOT model PEST model Financial models Employee surveys Employee engagement tools Feedback systems(Video/Audio/Written or informal)	Corporate strategy Consolidation Expansion Downsizing Combination. Growth Strategy Mergers & Acquisition Joint-ventures Internationalisation Strategic partnerships.	Resource Allocation Budgeting Strategic knowledge acquisition Training & Development Monitoring and control Identification of KPIs. Resource optimisation
		Creativity tools Design workshops Brainstorming sessions Informal hangouts/meetings for staff Social evenings Creativity workshops Innovation vouchers for new discovery.	Business strategy Differentiation Cost-leadership Focus Stuck-in-the-middle.	Leveraging capabilities Strategic Human Resource Management. Leveraging technology to gain competitive advantage Individual professional's expertise Reputation
Their characteristics: Strategic type: Reactors Analysers Defenders Prospectors	Project management activities with strategic intent Time, cost and quality management Project tracking/monitoring Partnering and seeking help on demand	Planning frameworks Internal strategic plans Health and Safety plans Quality management plans Environmental management plans	Approach to strategy Emergent Formal Technology driven Internal resources driven.	Market awareness Identification of markets to compete Improved knowledge of the industry. Understanding competitors. Time window for opportunity

<p>Risk Attitude: <i>Risk-Savvy:</i> Managers, Maximisers; <i>Risk-Averse:</i> Conservators, Pragmatists</p> <p>Leadership style: Authoritative Consultative Participative Benevolent</p> <p>Dynamic capabilities: Professionalism Innovation driven culture Technological savvy Market knowledge</p>	<p>Creative artefacts Mapping project plans and dashboards Using financial plans and forecasting Role playing/scenario planning</p>	<p>Technological tools Building Information Modelling (BIM) Computer Aided Design (3D,4D, 5D) CostX/REVIT etc. Collaborative technologies/data sharing Websites, digital marketing tools Digitisation</p>	<p>Decision-making characteristics Repeat business Performance measurement Human Resources Mgt. Innovation Participation Comprehensiveness of strategy Cost/Financing/Pay Back Period</p>	<p>Strategic knowledge acquisition Identification of type of Continuous Professional Development (CPD) events to prioritise. Strategic knowledge investments</p>
--	---	--	---	---

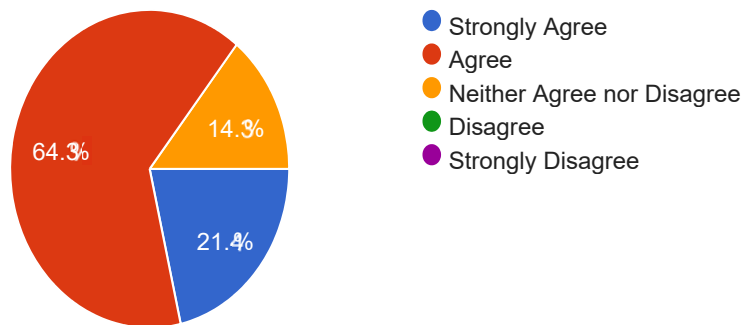


Strategy-As-Practice Framework for Strategic Decision Making

14 responses

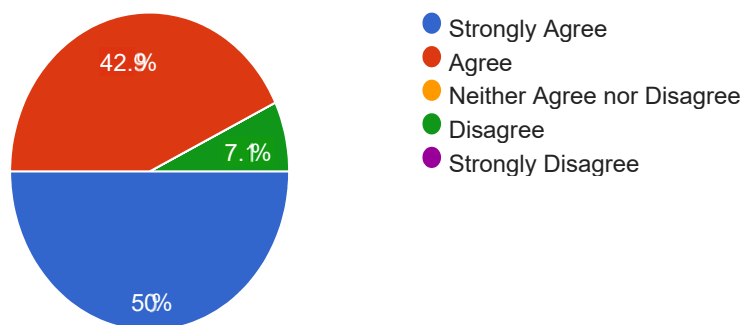
Relevance to strategic decision making

14



Reflective of the strategic decision-making process within construction

14 responses



Is there any element in the framework that is irrelevant and needs to be removed?

11 responses

no

None

No - I felt it all has relevance

No item irrelevant

Not all elements may be applicable to particular firms

No

All relevant with me

innovation vouchers

Is there any element omitted in the framework that you wish to add?

12 responses

no

None

Lower technological tools like Excel (basic data usage) and Project Management techniques whether formal (digital) or informal (analogue)

you might consider management and regular reviews of not only Risk but all strategies & tools

None that I can think of.

No - Very comprehensive framework and very well summarized.

No

No.

Human element and cultural strategy

no.

Remote meetings under Technological Tools