

THE INTERACTION BETWEEN THE MAIN DETERMINANTS OF CONSTRUCTION ORGANISATIONAL PERFORMANCE IN NEW ZEALAND

A thesis submitted to Auckland University of Technology in fulfilment of the requirements
for the degree of

Doctor of Philosophy (PhD)

October 2021

School of Future Environment

Auckland University of Technology

By

Hamzah E. Alqudah

Primary supervisor: Dr Mani Poshdar

Co-supervisor: Ass. Prof. James Olabode Bamidele Rotimi

Co-supervisor: Dr Luqman Oyewobi

Mentor: Prof. John Tookey

Abstract

The construction industry is dynamic and unpredictable. Similar organisations within the construction industry compete to outdo one another. In New Zealand, construction organisations are facing challenges in many areas that determine their performance. This research investigates the factors that determine organisational performance and their interrelationships in the New Zealand construction industry. It creates a holistic framework to model the causes of the difference in performance among organisations in the construction industry in New Zealand. The thesis identifies the determinants of construction organisations' performance and investigates their interactions, which explains the performance differentials among the construction organisations operating in New Zealand. The Systematic Literature Review and Relative Importance Index revealed various characteristics of organisations, resources and capabilities, competitive strategies, business environment, and customer relationship management, are significant factors that determine the performance of organisations operating in the New Zealand construction industry.

A mixed methods research approach was employed to test the hypotheses that the main determinants can explain the performance differentials between organisations. The Partial Least Squares Structural Equation Modelling (PLS-SEM) technique was used to analyse and determine the relationships between variables. The results from this technique showed that competitive strategies, business environment, resource and capabilities, organisational characteristics, and customer relationship management practices were impact factors that influence the performance of organisations in the construction industry. Furthermore, the findings revealed that resources and capabilities are the strongest influences of organisational performance in the New Zealand construction industry.

The study adds evidence to the body of knowledge on construction management whilst also developing a model that demonstrates the influence of industrial and dependent factors that

influence the performance of organisations in the construction industry. The set of the main determinants are recognised as important factors in shaping organisations' competitiveness. However, according to the literature, organisations should understand the interactions between these factors to develop the most suitable strategy for a particular situation they encounter. A comprehensive understanding of these factors will help to detect risks and opportunities within the operational environment of a construction organisation. Therefore, organisations can adjust their approach in resource allocation to gain a sustainable competitive advantage. Improvements in the performance of firms in the construction industry can support local industry development, which enhances the nation's economic development.

ATTESTATION OF AUTHORSHIP

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.

Signed

Hamzah E. Alqudah

LIST OF PUBLICATION

Journal Articles

- Alqudah**, H, E., Poshdar M., Rotimi, J. O. B., Oyewobi, L., & Tookey, J. (2021). Determinants of organizational performance in construction: a merged critical analysis and systematic literature review. (Ready for Submission): Chapter 3.
- Alqudah**, H. E., Poshdar, M., Tookey, J. and Rotimi, J. O. B. (2020). A rank order of determinants of construction organisations' performance in New Zealand. *International Journal of Construction Supply Chain Management* Special Issue Vol. 10, No 2. (pp. 194-211) DOI 10.14424/ijscm100220-194-211: Chapter 4.
- Alqudah**, H, E., Poshdar M., Rotimi, J. O. B., Oyewobi, L., & Tookey, J. (2021). Sustaining construction organisations in NZ: A linear regression model approach to analysing determinants of their performance. (Ready for Submission): Chapter 5.
- Alqudah**, H. E., Poshdar, M., Oyewobi, L., Rotimi, J. O. B., & Tookey, J. (2021). Business Environment, CRM, and Sustainable Performance of Construction Industry in New Zealand: A Linear Regression Model. *Sustainability*, 13(23), 13121: Chapter 6.
- Alqudah**, H, E., Poshdar M., Rotimi, J. O. B., Oyewobi, L., & Tookey, J. (2021). Determinants of organisational performance: PLS-SEM approach towards New Zealand construction organisations. (Ready for submission): Chapter 7.
- Alqudah**, H, E., Poshdar M., Rotimi, J. O. B., Oyewobi, L., & Tookey, J. (2021). Assessing the Practical Capabilities of the Organisational Performance Determinants' PLS Model in Construction. (Ready for submission): Chapter 8.

Conference Proceedings

- Alqudah**, H., Poshdar, M., Rotimi, J. O., & Oyewobi, L. O. (2018). Determinants of construction organisations' performance: a systematic literature review. Proc., 42nd Australian Universities Building Education Association (AUBEA).
- Alqudah**, H. E., Poshdar, M., Rotimi, J. O., & Tookey, J. (2020). Performance Differentials in SMEs: The New Zealand Construction Industry. 6th New Zealand Built Environment Research Symposium (NZBERS 2020) (pp. 189-195). Auckland: Massey University.

Co-Authored Works and Declaration of Collaboration

Statement from co-authors confirming the authorship contribution of the PhD candidate:

As co-authors of the research “The interaction between the main determinants of construction organisational performance in New Zealand”, we confirm that Mr Hamzah Alqudah contributed over 80% of the research. Mr Hamzah Alqudah is responsible for the writing, ideas, and content of the research.

Supervisors, Dr Mani Poshdar, Assoc. Prof. James Rotimi, and Dr Luqman Oyewobi, and the mentor, Prof. John Tookey, provided guidance and support to improve the quality of the research.

Contribution of the authors to each journal article:

Hamzah Alqudah: 85%

Dr Mani Poshdar: 5%

Assoc. Prof James Rotimi: 5%

Dr Luqman Oyewobi: 3%

Prof John Tookey: 2%

Contribution of the authors to each conference article:

Hamzah Alqudah: 85%

Dr Mani Poshdar: 5%

Assoc. Prof James Rotimi: 5%

Dr Luqman Oyewobi: 3%

Prof John Tookey: 2%

Authors' signatures:

Hamzah Alqudah

Dr Mani Poshdar

Assoc. Prof James Rotimi

Dr Luqman Oyewobi

Prof John Tookey

ACKNOWLEDGEMENTS

Alhamdulillah. First and foremost, praises and thanks to Allah, the Almighty, for his showers of blessings throughout my research work to complete this stage of my life successfully.

I would like to take this chance to genuinely thank my supervisor, Dr Mani Poshdar, for his ultimate support, extraordinary assistance and above all his overwhelming attitude to help make this journey worthwhile. Sir, without your understanding, sincere care, and constructive criticism this work would not have seen the light. I owe a deep gratitude to my co-supervisor, Assoc. Prof. James Rotimi, for his input, feedback and for dedicating time and effort to improving this thesis and broadening my research knowledge. Special thanks go to Dr Luqman Oyewobi and Prof John Tookey for all their support during this journey.

I am extremely grateful to my parents, Edris and Iman, for their unconditional love, prayers, caring and sacrifices for which I will always be in debt. Thank you for encouraging me to follow this dream and for it being a perfect example of dreams that can be chased. I am grateful to my brothers, Amr and Mohammed and to my sisters Danyah and Yaqeen for all their emotional support and absolute love.

I would like to extend my gratitude to all my dear friends who were there for me whenever I needed support: Farid, Omar, Jovan, Sofia, Mehrdad, Suliman and Sergey. Also, to all my colleagues for the valuable discussion and help during this journey.

Thanks to the AUTECH Secretariat for their support in reviewing and approving the ethics applications used to conduct questionnaires and interviews. The ethics application number is 19/154; 20/104 and they were approved on 9/05/2019; 10/06/2020 and 12/04/2021.

I must not forget to thank Auckland University of Technology (AUT) and the School of Future Environment for providing me comfortable workspace and facilities to complete this research.

DEDICATION

This thesis is dedicated to the loving memory of my uncles, Dr Abdulhamid Alqudah and Mahmoud Alqudah, and all those who could not see me achieving this dream.

Table of Contents

Chapter 1 GENERAL INTRODUCTION.....	1
1.1 Research Background.....	1
1.2 Problem Statement	6
1.3 Research Questions	10
1.4 Aim and Objectives of the Research.....	10
1.5 Rationale and Significance of the Study	11
1.6 Overview of Research Methodology.....	12
1.7 Scope of Study	14
1.8 Structure of the Thesis.....	14
Chapter 2 RESEARCH METHODOLOGY	17
2.1 Introduction	17
2.2 Methodological Framework	17
2.3 Research Philosophy	18
2.3.1 Ontology	19
2.3.2 Epistemology	19
2.3.3 Axiology	20
2.4 Research Paradigm.....	20
2.4.1 Justification of the Pragmatism Worldview	23
2.5 Research Approaches	26
2.5.1 Quantitative Research Approach.....	27

2.5.2 Qualitative Research Approach	28
2.5.3 Mixed Methods Approach	29
2.6 Research Approach and Strategy Adopted for the Study.....	31
2.6.1 Multi-phase Design Strategy	33
2.7 Research Design for the Current Study.....	37
2.7.1 Data Collection	38
2.7.2 Sampling Approach	38
2.7.3 Data Analysis.....	39
2.7.4 Credibility of the Research Findings	40
2.8 Ethical Considerations.....	42
2.9 Summary	43
Chapter 3 DETERMINANTS OF ORGANIZATIONAL PERFORMANCE IN	
CONSTRUCTION.....	44
3.1 Prologue	44
3.2 Introduction	45
3.3 Study Design	47
3.4 Literature Search	48
3.4.1 Establishing a Search Protocol	49
3.4.2 Database Search.....	50
3.4.3 Literature Selection.....	50
3.5 Literature Analysis	51
3.5.1 Descriptive Analysis.....	51

3.5.2 Content and Quantitative Analysis	54
3.6 Discussions.....	57
3.6.1 Technical Skills	57
3.6.2 Management Ability	59
3.6.3 Strategic Capital	62
3.6.4 Operational Performance Factors	64
3.6.5 Social Influence	66
3.6.6 Resources and Financial Ability.....	69
3.7 Conclusion.....	72
3.8 Epilogue	73
Chapter 4 A RANK ORDER OF DETERMINANTS OF CONSTRUCTION	
ORGANISATIONS' PERFORMANCE IN NEW ZEALAND	74
4.1 Prologue	74
4.2 Introduction	75
4.3 Background of Performance Differentials	78
4.3.1 External Determinants	79
4.3.2 Management Style	80
4.3.3 Decision Making Style	80
4.3.4 Organisational Asset.....	81
4.4 Research Method.....	82
4.4.1 Step 2: Ranking the Main Determinants.....	82
4.5 Research Finding and Discussions	87

4.6 Conclusion.....	89
4.7 Epilogue	90
Chapter 5 COMPETITIVE STRATEGY, ORGANISATIONAL CHARACTERISTICS, RESOURCES AND CAPABILITIES AND THEIR RELATIONSHIPS WITH ORGANISATIONAL PERFORMANCE.....	91
5.1 Prologue	91
5.2 Introduction	92
5.3 The Proposed Framework and its Related Hypotheses	94
5.3.1 Organisational Characteristics and Organisational Performance	94
5.3.2 Competitive Strategies and Organisational Performance.....	96
5.3.3 Organisational Resources/Capabilities and Organisational Performance.	98
5.3.4 Organisational Performance Measurement	99
5.4 Research Methods	101
5.4.1 Measures	102
5.5 Data Analysis and Results.....	105
5.5.1 Construct Reliability and Validity	105
5.5.2 The Analysis Results	110
5.6 Discussion	113
5.7 Conclusion.....	115
5.8 Epilogue	116

Chapter 6 BUSINESS ENVIRONMENT, CRM, AND SUSTAINABLE

PERFORMANCE OF CONSTRUCTION INDUSTRY: A LINEAR REGRESSION

MODEL 117

6.1 Prologue 117

6.2 Introduction 118

6.3 The Structure of the Proposed Framework and Its Related Hypotheses..... 120

6.3.1 Customer Relationship Management (CRM)..... 121

6.3.2 The Business Environment..... 123

6.4 Materials and Methods 125

6.4.1 Organisational Performance Measurement 125

6.4.2 Sample Characteristics and Questionnaire Development..... 127

6.4.3 Variables and Their Measurement..... 128

6.4.4 Data Analysis..... 130

6.5 Results 134

6.6 Discussion 138

6.7 Conclusion..... 140

6.8 Epilogue 142

Chapter 7 PARTIAL LEAST SQUARES STRUCTURAL EQUATION MODELLING

OF ORGANISATIONAL PERFORMANCE DETERMINANTS 143

7.1 Prologue 143

7.2 Introduction 144

7.3 Modelling and Hypotheses Development for Organisational Performance..... 145

7.3.1 Competitive Strategies and Organisational Performance	146
7.3.2 Organisational Characteristics and Organisational Performance	147
7.3.3 Resources and Capabilities and Organisational Performance	149
7.3.4 Business Environment and Organisational Performance	150
7.3.5 CRM and Organisational Performance.....	153
7.3.6 Interaction Between Organisational Characteristics, Strategies, Environment, Resources/Capacities, CRM, and Performance	155
7.4 Research Methods	156
7.4.1 Research Measures and Constructs	157
7.4.2 Methods of Data Analysis	163
7.5 Research Analysis and Findings	163
7.5.1 Measurement Model Evaluation.....	164
7.5.2 Structural Model Evaluation.....	167
7.5.3 Inner Model Coefficient Sizes and Significance	169
7.6 Discussion	171
7.7 Conclusion.....	174
7.8 Epilogue	175
Chapter 8 ASSESSING THE USABILITY OF THE PROPOSED PLS MODEL IN CONSTRUCTION.....	177
8.1 Introduction	177
8.2 General Testing Approach	177
8.3 Sampling.....	178

8.4 The Interview Design	179
8.5 Interview Questions.....	179
8.6 Interview Session	180
8.7 Decoding of the Obtained Information	180
8.8 Sample Size	181
8.9 Results of Thematic Analysis.....	182
8.9.1 Efficient Combination of Determinants	182
8.9.2 Powerful Measurement of Organisational Performance	183
8.9.3 Extra Specialised Applications.....	183
8.9.4 PLS Data Identification Phase.....	183
8.9.5 PLS Adaptation Phase	184
8.10 Conclusion.....	185
Chapter 9 SUMMARY OF RESEARCH FINDINGS, CONCLUSIONS AND RECOMMENDATIONS.....	187
9.1 Introduction	187
9.2 Aim and Objectives of the Study	187
9.3 Summary of Gaps Found in the Literature.....	189
9.4 Summary of Research Findings	192
9.4.1 Objective 1.....	192
9.4.2 Objective 2.....	193
9.4.3 Objective 3.....	193
9.4.4 Objective 4.....	194

9.4.5 The Main Research Question	194
9.5 Contribution to Knowledge	195
9.6 Practical Implications of Research Findings and Recommendations	197
9.7 Research Limitations.....	199
9.8 Recommendations for Future Research	200
References.....	202
Glossary	233
Appendix A: Ethics Approvals and Documents.....	235

List of Tables

Table 1.1: Survival rate (%) for enterprises that started in 2015-18 (Stats NZ, 2021).....	8
Table 2.1: Comparison of the four main research paradigms (Creswell, 2009)	22
Table 3.1: Score matrix for a multi-author paper (Howard et al., 1987)	53
Table 3.2: Top 10 Research origin of published papers.	53
Table 3.3: Researchers involved in at least three papers	54
Table 4.1: Survival rate (%) for SMEs that started in 2015-18 (Stats NZ, 2021)	76
Table 4.2: Organisational performance determinates (Alqudah <i>et al.</i> , 2018).....	77
Table 4.3: Total respondent's results in performance determinants.....	86
Table 4.4: RII and ranking of performance determinants.....	87
Table 5.1: Performance measures used in the research modified and adapted from Richard <i>et al.</i> (2009).....	100
Table 5.2: Demography of organisations surveyed	102
Table 5.3: Constructs for the study and sources of measurement items.....	103
Table 5.4: Principal component analysis result for the organisational characteristics constructs.	106
Table 5.5: Principal component analysis result for the competitive strategy constructs	107
Table 5.6: Principal component analysis result for the resources and capability constructs.	108
Table 5.7: Descriptive statistics of the variables used in the study.	111
Table 5.8: Regression analysis result between variables and performance measures	112
Table 6.1: Some performance measures used in the research modified from Richard <i>et al.</i> (2009).....	126
Table 6.2: Organisational demographics	128
Table 6.3: Variables of the study	128

Table 6.4: Principal component analysis result for the customer relationship management constructs	132
Table 6.5: Principal component analysis result for the business environment constructs.....	133
Table 6.6: Role of thump to correlation effect.....	135
Table 6.7: Descriptive statistics of the variables used in the study.	137
Table 6.8: Regression analysis result between variables and performance measures	138
Table 7.1: Factor loading for study variables and its measurement items.....	159
Table 7.2: Validity and reliability of the constructs.	165
Table 7.3: Discriminant validity.	165
Table 7.4: Heterotrait-monotrait (HTMT).	167
Table 7.5: Structural estimates.....	170
Table 8.1: Interviewees	181
Table 8.2: Themes-interviewee matrix for interviews	182
Table 9.1: Research hypotheses	196

List of Figures

Figure 1.1: Research design.....	13
Figure 1.2: Research framework.....	16
Figure 2.1 Research design hierarchal model.....	18
Figure 2.1: Flowchart of the basic procedures in implementing a multiphase design.....	36
Figure 2.2: Research design for the current study (Research Onion).....	37
Figure 3.1: SLR study design.....	48
Figure 3.2: Chronological distribution of findings	52
Figure 3.3: Analysis of organisational performance determinants in the construction industry	56
Figure 3.4: Conceptual framework of performance determinants	57
Figure 3.5: Conceptual framework of technical skills and competitive advantage	59
Figure 3.6: Conceptual framework of management ability and competitive advantage	62
Figure 3.7: Conceptual framework of strategic capital and competitive advantage.....	64
Figure3.8: Conceptual framework of operational performance factors and competitive advantage	66
Figure 3.9: Conceptual framework of social influence factors and competitive advantage	69
Figure 3.10: Conceptual framework of resources and financing ability and competitive advantage	71
Figure 4.1: Conceptual framework of performance determinants (Alqudah <i>et al.</i> , 2018).....	79
Figure 5.1: Theoretical framework	94
Figure 5.2: Organisational characteristics measures.....	95
Figure 5.3: Competitive strategy measures.....	97
Figure 5.4: Resources and capabilities measures.....	99
Figure 6.1: Conceptual framework	120

Figure 7.1: Conceptual framework	146
Figure 7.2: Result of factor analysis	166

Chapter 1 GENERAL INTRODUCTION

1.1 Research Background

Recently, firms in the construction industry have had to face cutthroat competition in both developing and developed economies (Tan, Shen & Langston, 2012; Oyewobi *et al.*, 2016). According to various researchers, the intense competition has resulted in an emerging interest in analysing the performance of firms in the construction industry (Lansley, 1987; Shirazi, Langford & Rowlinson, 1996; Tan *et al.*, 2012). Superior performance can be framed advantageously in terms of competitive advantage. Lynch (2012) argued that competitive advantage is the significant superiority that an organisation has over its competitors within a specific industry. Organisations with superior performance can be positioned against other firms as having a competitive advantage. A competitive advantage allows an organisation to improve product and service value over competitors in the industry. Various scholars have studied the relationship between business environment, resource and capabilities, competitive strategy, organisational characteristics, customer relationship management and competitive advantage (Chew, Yan, & Cheah, 2008; Lenz, 1981; Tan *et al.*, 2012; Yamin, Gunasekaran, & Mavondo, 1999; Mumuni & O'Reilly, 2014).

Competitive strategies are often referred to as business-level strategies which provide significant advantages in explaining competitiveness of business in terms of profitability and long-term organisational performance (Nandakumar, 2008). There are two main classifications of strategies in use in construction: Mile and Snow's (1978) strategy typologies and Porter's (1980; 1985) generic competitive strategies. This study adopted Porter's (1980) generic competitive strategies model because of its precise structure, popularity and wide application in the construction industry (Betts & Ofori, 1992; Li & Ling, 2012; Price, 2003; Tan *et al.*, 2012).

According to Porter, an organisation can establish an uninterrupted competitive advantage and increase profitability by employing one of the following three generic strategies: focus on outperforming competitors in an industry, concentrate on limited market or market segments and overall cost leadership strategy to ensure superior profits by lowering costs, or differentiation strategy by creating a product or service that is regarded industry-wide as being unique. Various researchers such as Budayan, Dikmen and Birgonul (2013), Dikmen and Birgonul (2003) and Li and Ling (2012) have supported Porter's claim and provided evidence that backs up their arguments on the applicability and consistency of Porter's generic strategies in the construction industry. Besides, the literature that has focused on Porter's generic strategy has become more aware of the significance of understanding competitive strategies as a source to differentiate the performance of various organisations within the construction industry. Nonetheless, few empirical studies such as those conducted by Oyewobi *et al.* (2017), Dikmen and Birgonul (2003), and Kale and Arditi (2003) have determined the impact of competitive strategy on organisational performance in the construction industry.

The second important factor that influences the competitive advantage of an organisation is the *business environment*. Shirazi, Langford and Rowlinson (1996) viewed the construction business environment as the interaction between an organisation's internal and external factors, which consist of pertinent physical and social factors both within and outside the organisation's boundaries, and influence decisions by individuals and units of activity. According to Dess and Beard (1984), Ketchen, Thomas and Snow (1993) and McGhan and Porter (1997), business environments regulate relationship strength between organisational performance and strategy. However, strategy researchers disagree on whether the business environment has a direct impact on competitive advantage. For instance, a study conducted by Prescott (1986) revealed that the business environment influences the relationship between strategy and performance. However, the nature of this influence is unknown. Further, Prescott (1986) found an

insignificant direct relationship between business environment and competitive advantage. Keat and Hitts (1988) argue that a cost-leadership strategy is more effective in an environment that is more stable but has a negative relationship within an environment that is dynamic or uncertain. On the contrary, Kayabayi, Eyuboglu, and Thomas (2007) claim that a stable, less complex environment allows differentiation strategy to be optimal. With an optimal differentiation strategy and aiming for innovation, organisations can charge premium rates without the fear of being copied by industry rivals. Various researchers have also discussed the variable of munificence as an environment feature. Chen (2003) defines munificence as the accessibility of key resources by organisations in an environment that supports organisational growth. Researchers have also proposed that, in a low-munificence environment, a focus strategy would be preferable. However, in a high munificence setting, organisations prefer differentiation with innovative strategy (Baum & Wally, 2003; Kabaday *et al.*, 2007).

Organisational characteristics is the third factor to consider. Characteristics of an organisation are attributes derived from the management style expressed in organisational culture, structure, or strategy and the nature of the relationship between the management and employees (Magnier-Watanabe & Senoo, 2008). According to Lansley (1987), organisational characteristics are the factors that distinguish organisations based on their management style, problem-solving approach, or decision-making style, and organisational structure, which enable an organisation to adapt to the business environment and gain superior performance. This study considers organisational characteristics as the distinctive features of an organisation that enable it to perform its statutory roles, take strategic decisions and get recognition as a business entity within the industry. Organisational characteristic is the least tacit of concepts in the construction business, in spite of its significance in improving organisations' performance.

Lenz (1981), Porter (1985), and Miller (1988) explored the association between the levels of organisational performance and organisational characteristics, type of business environment, and competitive strategies by which an organisation can pursue various generic competitive strategies. However, minimal consideration has been devoted to the impact competitive strategies and organisational characteristics have on the organisational performance of firms in the construction industry related to the business environment. Besides, studies conducted by Ankarah, Proverbs, and Debrah (2009), Giritli and Oraz (2004), and Shirazi *et al.* (1996) have investigated the performance consequences of organisational characteristics such as structure and cultures in different environmental conditions.

Organisational *resources and capabilities* is the fourth contingent variable to consider. Resources and capabilities are the measures of an organisation's internal element of competitiveness. Resources are the input employed in process of production while capabilities are the abilities required for a group of resources to execute a specific activity or task (Grant, 1991). Organisational resources can be classified into physical, financial, human, organisational and technological resources (Chew et al., 2008). Resources alone are not sufficient to enable organisations to achieve sustainable performance; they must be organised into capabilities. Hence, an analysis of these resources and capabilities will assist organisations to understand how to deploy their strategies to areas where they have resources and strong capabilities. According to the literature, the resources and capabilities of an organisation distinguish its performance from its competitors, leading to higher performance in the long run (Barney, 2001; Spanos, Zaralis & Loukas, 2004)

The last contingent factor is *customer relationship management (CRM)*. CRM is relationship orientation, customer retention and superior customer value created through process management to increase customer satisfaction and customer loyalty by offering more

responsive and customized services to each customer. The available theoretical and empirical research suggests that CRM deployment can improve organisational performance. Theoretically, it has been suggested that the core principles of CRM (establishing and managing long-term relationships with valued consumers) strike at the heart of the marketing notion (Morgan & Hunt, 1994), which has been identified as a crucial driver of success in a competitive environment. Empirically, several studies have shown that CRM significantly impacts business performance (e.g., Ang & Buttle, 2006; Camarero Izquierdo, Gutiérrez Cillán, & San Martín Gutiérrez, 2005; Reinartz, Krafft, & Hoyer, 2004). It has been found that effective CRM deployment can result in desirable organisational outcomes such as increased customer satisfaction, retention, and organisational profitability (Reinartz *et al.*, 2004). However, certain aspects of the construction industry impact their primary business activities and, as a result, influence the type of organisational characteristics that will be implemented (Phua, 2006). This suggests that the unique resources accumulated by an organisation, together with the environmental forces in the industry, determine the strategies that organisations adopt and the practices they follow in managing their relationship with customers to achieve sustained superior performance (Phua, 2006). In the New Zealand construction industry, little is understood about how an organisation's resources and capabilities can lead to sustained organisational performance, combined with proper strategies, environmental forces, and customer management style.

Yang, Yeung, Chan, Chiang, and Chan (2010) investigated the concept of construction performance from organisational, project, and shareholder perspectives. Organisational performance is considered as the most essential criterion in evaluating organisations in terms of their environment and the course of their actions (Richard *et al.*, 2009). According to Wu (2009) and Laitinen (2002), performance is a measure of how effectively and efficiently a mechanism/process put in place by an organisation produces results in an outcome along a

dimension determined *á priori*, with respect to a target. In the construction industry, both objective and subjective measurements are used to measure organisational performance (Kale & Arditi, 2003; Tan *et al.*, 2012; Oyewobi *et al.*, 2016). However, other scholars argue that when investigating the links between strategy and performance, the choice of performance measures can significantly impact the results and conclusions (Parnell, O'Regan, & Ghobadian, 2006). As a result, subjective measurements (non-financial) of organisational performance provide more insight into organisational processes and provide knowledge that financial indicators alone cannot provide (Parnell *et al.*, 2006).

Despite increased awareness among construction industry strategy researchers, the relationship between performance and strategy, organisational characteristics, business environment, and CRM is unclear. This is because few empirical studies have focused on how the business strategies of an organisation and organisational characteristics provide a causal explanation of performance differences in the construction industry. Conventional strategic management applies theories such as the Dynamic Capabilities theory (DC) and Resource-Based View theory (RBV) to establish the links between these factors. Despite this, a general lack of organisational research applies these theories to the construction industry (Cheah & Garvi, 2004; Chew *et al.*, 2008; Lansley, 1994). Therefore, studies that focus on the construction industry have been unable to determine the organisational characteristics, CRM, generic strategies, and environmental factors that promote superior performance. These studies have also been unable to provide strong support for and incorporate these factors to achieve excellence in organisational performance. This research investigates how the factors mentioned earlier influence organisational performance to bridge the gap.

1.2 Problem Statement

Operating in the construction industry is becoming more competitive and riskier across the world (Proverbs & Faniram, 2001; Walker, 2015). Researchers argue that the reason for this is

the core characteristics and fragmentation of the construction industry. The competitive intensities of the construction industry have attracted little attention from construction management researchers compared to mainstream strategic management researchers, as a motivation in investigating the sources of competitive advantage. Therefore, more research should focus on bridging this gap by providing more insight into the factors and processes that limit the ability of organisations to capitalise on their capabilities. According to Phua (2006), these factors and processes also limit the ability of construction companies to make informed decisions on the use of unique resources they have access to, to attain a long-term competitive advantage.

In New Zealand, the construction sector generates economic growth, contributing significantly to businesses, employment, and GDP (PwC, 2016). Accordingly, MBIE (2021) stated that the construction sector is a national asset that must undergo development and transformation to adequately deal with challenges caused by the competitive nature of the sector, both in local and global terms. With 10% of national employment in 2020, New Zealand construction and construction-related services were among the top activities that played a critical role in generating economic growth (MBIE, 2021). The construction industry integrates with other industries, directly and indirectly, having a significant impact on the economy (Stats NZ, 2019). As of December 2020, it had comprised 278,300 employees: 3.8% more than the previous year (MBIE, 2021). In 2019, the total construction value increased 7.5% to NZD 43.2b (MBIE, 2020).

Expansion in the New Zealand construction sector has been driven by various factors. Activities in the residential sector in North Island have been mainly driven by population growth while most of the construction work in the South Island has been related to post-earthquake reconstruction. The building consents issued in infrastructure, residential, and non-

residential sectors have increased yearly as employment in these sectors has followed the same pattern. The country's leading regions regarding the value of construction projects include the Bay of Plenty, Auckland, Wellington, and the Waikato (MBIE, 2020).

The construction industry in New Zealand has experienced a high rate of business insolvency and failure for quite some time as all sizes and types of businesses operating across all sectors and industries have been affected. According to statistics, the survival rate of enterprises in all construction industry sectors that began in 2015 is not more than 44% after five years. Shockingly, just 85% of enterprises survive after the first year (Stats NZ, 2021). Table 1.1 below lists the survival rates of both residential and non-residential enterprises between 2015 and 2018.

Table 1.1: Survival rate (%) for enterprises that started in 2015-18 (Stats NZ, 2021)

Residential building construction					
Businesses' birth	After 1 Year	After 2 Years	After 3 Years	After 4 Years	After 5 Years
2015	85	69	58	50	44
2016	86	70	59	52	..
2017	84	68	57	..	..
2018	85	71	..	..	..
Non-Residential building construction					
2015	84	68	53	49	42
2016	84	62	54	46	..
2017	85	59	48	..	..
2018	84	67	..	..	..

Despite what appeared to be an everlasting construction boom in New Zealand, it was revealed that construction organisations were unable to fulfil market demand, and the industry was at a peak. It could not outperform itself (ANZ, 2017). There may be more casualties as the under-pressure New Zealand construction industry battles to keep up with demand. New Zealand has witnessed various high-profile failures in the construction industry, such as the failure of Ebert

Construction. The impact of these failures has drawn attention to the business performance and behaviours of organisations within the industry. It is more logical to expand a business to do well in a booming industry. However, most companies in such an industry operate with low margins to secure contracts. As a result, these businesses lack built-in resilience when things change. Large and small enterprises lack sufficient understanding of good business practices and performance. Besides, business requires a forward view of upcoming construction projects for effective planning and confidence to invest their resources. These facts raised the attention for organisations to understand business performance and the factors that determine that performance in the New Zealand construction industry.

The government and the construction industry have partnered with a plan to lift the construction industry in general and organisational performance specifically. For instance, leaders across the construction industry and the government came together in April 2019 to launch the *Construction Sector Accord*. The Accord set its vision to make the construction sector of the nation to be high performing. To achieve this objective, a set of shared goals were identified to raise capability, enhance resilience, improve productivity and restore the industry's confidence, pride, and reputation. The *Construction Sector Accord* prioritised working areas to achieve their goals led by enhancing organisations and improving their organisational performance.

BRANZ, with several other industry leaders, has launched the *Industry Transformation Agenda* to address challenges the New Zealand construction industry faces. This group recognised that the New Zealand construction industry is fragmented and inflexible. The goal was to establish a method to embrace technology, quality, and efficiency to create a better future for everyone affected by the industry.

Most studies on the determinants of performance undertaken to that stage had either failed to investigate the determinants at the organisational level or had used a limited set of determinants

(Assefa, Rivera & Vencatachellum, 2014; Swamy, Tiwari & Sawhney, 2018; Isik, Arditi, Dilmen & Birgonul, 2010; Oyewobi *et al.*, 2016). Moreover, no study had taken a holistic approach to the interaction among the primary determinants of organisational performance.

1.3 Research Questions

These issues served as the foundation for the primary research question:

What factors determine construction organisations' performance and their interaction in explaining the performance differentials of a construction organisation in New Zealand?

Answers to the following precise sub-questions were sought in order to address the primary research question:

- What are the major categories of the determinants of organisational performance identified in a global construction context so far?
- What are the elements of the identified conceptual framework of the organisational performance determinants calibrated to the New Zealand construction industry?
- How can modelling the interaction of the calibrated determinants influence organisational performance?

1.4 Aim and Objectives of the Research

This research aims to investigate the interrelationship of the main organisational performance determinants to develop a model to improve the construction organisational performance.

The research has sought to achieve the following specific objectives:

- *To identify the main determinants of organisational performance from the literature.*
To do so, a Systematic Literature Review will be performed to build a ground base to calibrate the determinants in the New Zealand context.

- *To specify the main performance determinants of organisations in New Zealand and their conceptual framework.* The Relative Importance Index will be used to rank the determinants based on construction professionals' experiences. The important determinants will be used to build a model to examine their interrelationships.
- *To examine the nature of relationships between the specified determinants and organisational performance.* The Regression method was used to determine the strength and characteristics of those relationships.
- *To develop a model for construction organisational competitiveness which links the interrelationships of the calibrated determinants to the New Zealand construction industry.* This research will use partial least squares structural equation modelling to understand the interrelationships to attain superior performance.

1.5 Rationale and Significance of the Study

According to the literature, competitive strategy has a critical impact on the performance excellence of a construction organisation (Price, 2003; Cheah & Garvin, 2004; Soetanto, Goodier, Austin, Dainty & Price, 2007). According to McGeorge and Zou (2013), construction companies require comprehensive strategies to tender for projects and develop the organisation successfully. The construction industry is project driven. Besides, the main characteristic of the industry is competitive tendering that involves a lengthy negotiating process at minimal profits (McGeorge & Zou, 2013; Soetanto *et al.*, 2007). Soetanto *et al.* (2007) contend that most construction companies fail to implement long-term strategies to survive in the challenging and highly competitive business environment. Several studies have focused on the construction industries in both developed and developing economies to determine the competitive strategies used by construction companies and the impact they have on the performance of these companies (Kale & Arditi, 2002; 2003; Lin & Ling, 2012; Tan *et al.*, 2012). These researchers

conceded the implementation of Porter's generic strategies in the industry and argued that an organisation's performance is influenced by the strategies adopted by the company.

The business environment, prospective competitive strategies, CRM, and resource and capabilities are important determining factors that shape an organisation's competitiveness. However, according to the literature, organisations should understand the relationship between these factors to develop the best strategies for every situation they encounter. A comprehensive understanding of the factors is essential in risk and opportunity identification within the environment in which a construction organisation operates. Therefore, the organisations can adjust their approach in resource allocation to gain a sustainable competitive advantage. Improvements in construction organisational performance can enhance the development of the local construction industry, which leads to the nation's economic development due to the interdependence of the construction industry with other sectors.

1.6 Overview of Research Methodology

This research falls under the umbrella of construction management research. According to Dainty (2008), although the positivist method is more dominant, other paradigms strive for methodological supremacy in this field. Simultaneously, researchers provide strong arguments on methodological heterogeneity and flexibility. Dainty (2008: 11) argues that a more comprehensive look at mixing research paradigms and methodologies can lead to better understanding of how practitioners conduct management roles in the construction sector. Therefore, this study uses a mixed methods approach while considering the advantages of methodological triangulation. It requires data collection, analysis, and mixing or combining quantitative and qualitative data while conducting a study (Creswell, 2020). Accordingly, a multiphase mixed methods design was adopted. It involved collecting, analysing, and combining both quantitative and qualitative studies (Creswell & Plano Clark, 2017).

The first step of the study involved an in-depth review of the literature on the factors that determine organisational performance in the construction context. It set the groundwork for developing a conceptual framework that would map the connections between the retrieved determinants. The literature review also aided in developing the research questions and the methodology used to answer them, which included quantitative questionnaires and semi-structured interviews. The first questionnaire aimed at collecting data on the retrieved determinants regarding the New Zealand construction industry. In comparison, the second questionnaire aimed to investigate the relationship between the selected determinants and organisational performance in the same industry. The interviews were employed to validate the findings of the established model using the PLS-SEM approach.

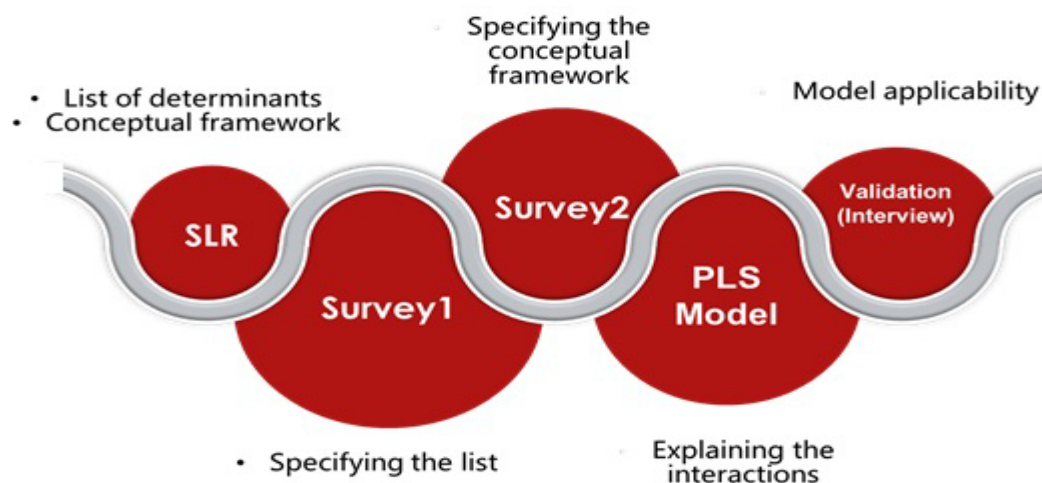


Figure 1.1: Research design

Descriptive statistics, correlation analysis, and factor analysis were used to analyse the quantitative data. The researcher used linear regression analysis to determine the relationship between the variables. PLS-SEM was used to create models that demonstrate the nature of this relationship and the level to which CRM, competitive strategies, organisational characteristics, and resource and capabilities influence organisational performance under different environmental conditions.

The semi-structured interview data were analysed qualitatively using content analysis. The quantitative and qualitative findings were used to develop a generic model for recognising organisational characteristics, competitive strategies, resources and capabilities, and CRM, resulting in higher organisational performance under a dynamic business environment. Chapter Two will provide additional details on the research methodology and approaches outlined in this thesis.

1.7 Scope of Study

This study looked into key issues concerning the performance of construction organisations in New Zealand, specifically, organisational resources and capabilities, CRM, and characteristics and strategies are leveraged to gain a strategic fit within the business environment. Consequently, the construction organisations served as the study's unit of analysis. The study was not limited to any specific construction organisations. Therefore, these organisations would enable the researcher to collect data on the determinants of organisational performance without limiting the size or the location of their operation within New Zealand. Despite several large companies operating on a global scale, the study only collected data from their New Zealand operations because it focused on the construction industry in New Zealand and its business environment.

1.8 Structure of the Thesis

There are nine chapters in this thesis.

Chapter One highlighted the thesis, summarising the study background, problem statement, primary research questions, and sub-questions. This chapter also stated the research aims and objectives and the rationale, significance, and limitations of the study.

Chapter Two discusses the research methodology in detail. This chapter discusses the general research paradigm applied in the study and identifies the specific mixed methods approaches used. The chapter then provides details about sample selection methods and the method used to collect and analyse both quantitative and qualitative data.

Chapter Three provides a systematic literature review on the factors that determine organisational performance in a construction context. The existing research on the contingent variables considered in this study is provided in this chapter. The chapter presents a conceptual framework of the retrieved determinants with the organisational performance.

Chapter Four specifies the retrieved determinants to the New Zealand construction industry. The chapter then ranks those determinants based on the participants' opinions and experiences using the Relative Importance Index (RII).

Chapters Five and Six discuss the quantitative data used in this study. The findings of statistical analyses are presented and discussed, together with a description of the correlation pattern between the research variables. The implications of these results on the conceptual model are discussed in this chapter.

Chapter Seven presents the establishment and ratification of the predictive model developed through the literature. Further, the findings of PLS-SEM and model fitting are also presented in this chapter.

Chapter Eight evaluates and discusses the practical capabilities of the developed inclusive method.

Chapter Nine highlights the fundamental conclusion to be derived from the study results. The chapter also deliberates the study's effectiveness in achieving its goals and objectives and its

contribution to the existing literature in the construction industry. The chapter also presents the research's limitations and proposes areas for future investigation.

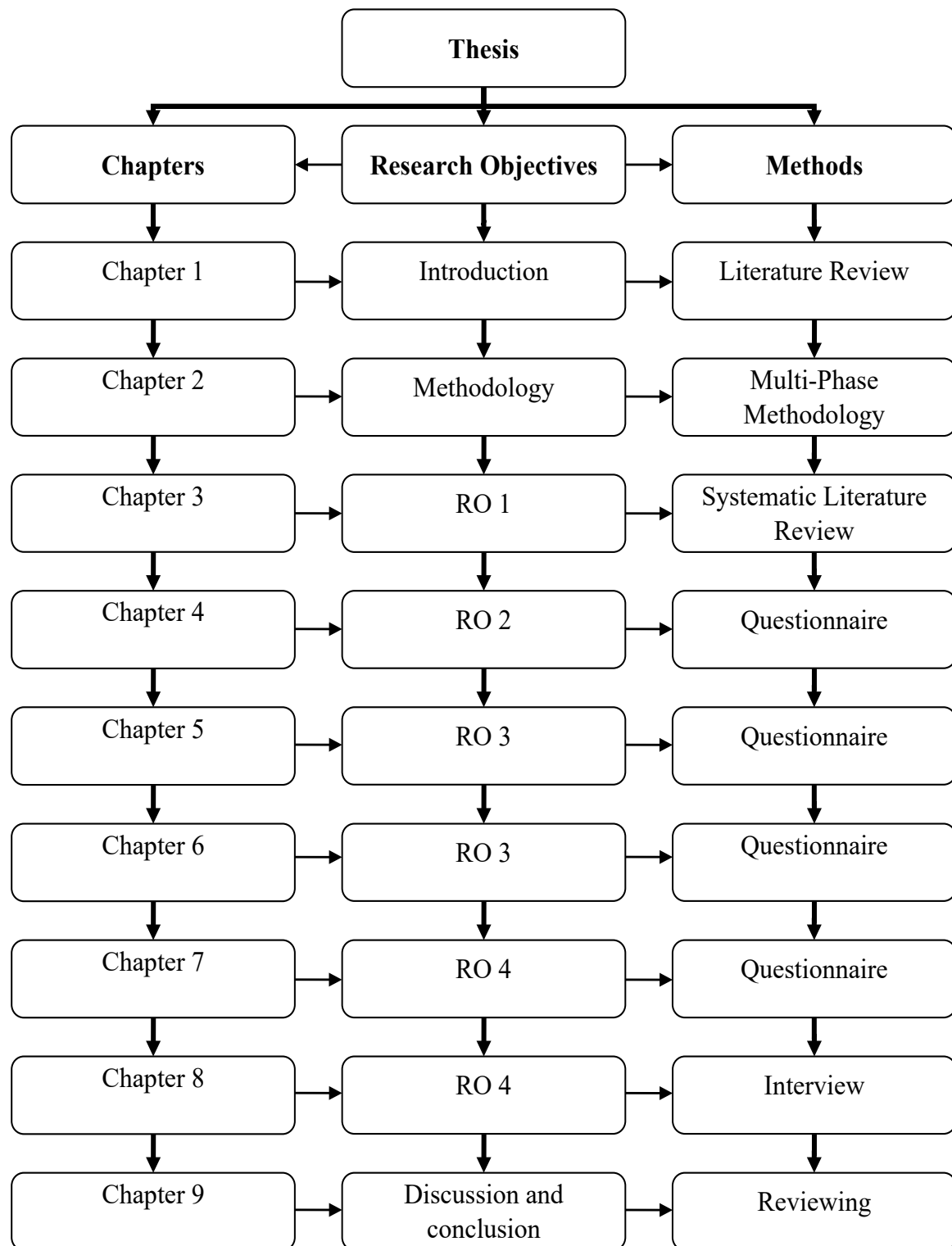


Figure 1.2: Research framework

Chapter 2 RESEARCH METHODOLOGY

2.1 Introduction

It is difficult to understand how performance factors are associated and how they affect organisational performance. This requires a thorough methodology for data collection and analysis to produce findings that describe the nature of the interaction and effect. This chapter's goal is to describe and explain the research techniques utilised in this study.

This chapter discusses the philosophical foundations of the research method under consideration, the main research models within the construction management research field, and the relationship between pragmatism and these paradigms. After that, it describes mixed methods research and the multi-phase mixed methods design that was applied in this study. Subsequently, the purpose of the research design and the criteria for evaluating the research design are discussed. Ultimately, ethical issues are looked at in more depth.

2.2 Methodological Framework

Tookey (1998) explains that the nature of any particular research problem will dictate its means of solution and therefore, the methodological framework and the methods used in the research should reproduce the features discussed in the research problem section. The purpose of research is to contribute new knowledge for the development and establishment of theory and practice. This is usually accomplished by identifying, investigating and finding solutions to attempted research problems (Remenyi, 1998). This research process is basically uncertain and risky and is established through collaboration between the conceptual and empirical world (Booth, Colomb & Williams, 2003; Gill & Johnson, 2002). A methodological framework should be able to forecast the possible difficulties and issues that the researchers may

experience during the research journey. Therefore, the identification of an appropriate methodological framework reduces the probability of failure.

A methodological framework consists of a philosophical construct which helps to identify and justify a research approach and an aspect of appropriate techniques (Easterby-Smith, Thorpe & Jackson, 2012). Kagioglou, Cooper, Aouad and Sexton (2000) presented a research design in terms of a hierarchal model consisting of philosophy, approaches, strategies, and methods\techniques, as shown in Figure 2.1.

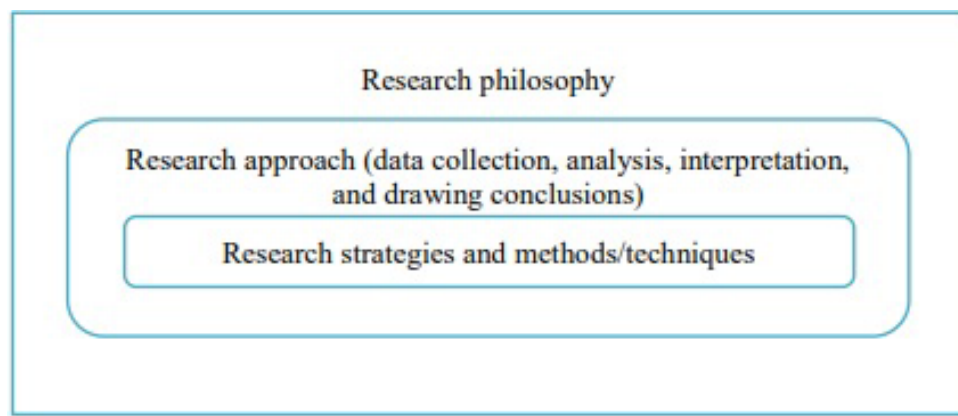


Figure 2.1 Research design hierarchal model

The model in Figure 2.1 shows that the research philosophy guides the research approaches which ensure the appropriateness of available strategies and methods\techniques. Thus, the methodological framework should establish a philosophical position, and select an appropriate research approach and applicable research techniques and methods.

2.3 Research Philosophy

Research is a compromise between the possibilities of different approaches obtained from understanding the philosophical background of a topic (Gill, Johnson, & Clark, 2010). Basically, philosophy investigates available theories so that researchers are able to build scientific knowledge from those theories (Gray, 2009; Sarantakos, 2005). Philosophy also

forms the foundation for research design which guarantees the quality of a research project (Easterby-Smith, Thorpe, & Lowe, 2002). Collis and Hussey (2009) explain that understanding the philosophical position of the research drives the way of writing the thesis. Therefore, it is essential to establish the philosophical position of any research project.

Easterby-Smith et al. (2002) showed that philosophy can be divided into positivism and interpretivism. Positivism and interpretivism are considered the main research paradigms and are the foundation of the Western intellectual tradition (Bryman & Bell, 2007; Gray, 2009; Silverman, 1998). The two paradigms of positivism and interpretivism are considered as the extreme ends of a paradigm spectrum. Therefore, along this paradigm spectrum, other paradigms can exist, e.g., pragmatism and postpositivism (Crossan, 2003; Saunders et al., 2011). However, the selection of a research paradigm is based on the assumptions of the ontological, epistemological, and axiological stances of the study (Creswell, 2007). The following subsections briefly discuss the significance of these three philosophical assumptions.

2.3.1 Ontology

The term ontology is explained as the nature of knowledge, and it answers the question: what really exists (Creswell, 2007; Saunders et al., 2011; Tan, 2002)? The nature of knowledge can be described using two views: objectivism and constructivism (Bryman & Bell, 2007). Objectivism believes social entities exist in reality outside of social actors whereas subjectivism emphasizes that social actors are considered as part of social phenomena, and social phenomena are the result of the actions of social actors.

2.3.2 Epistemology

Epistemology is related to how a researcher knows what **they** know (Creswell, 1994b; Tan, 2002). In other words, epistemology seeks to discover the connectivity between the researcher

and the object of the study. Epistemological considerations consider the most appropriate research methods to generate reliable and verifiable outputs. During the data collection stage, researchers who follow quantitative approaches appear to be disconnected from the object of study, whereas researchers who follow qualitative approaches seem very connected with the object of study (Creswell, 1994b; Smith, 1983). It can be argued that following both qualitative and quantitative approaches would eliminate the disadvantages of being separate from the object of study. Therefore, epistemological considerations can be satisfied by including a qualitative approach for a research study.

2.3.3 *Axiology*

The nature of the values that a researcher brings to the research is referred to as axiology (Carroll, 2008). As explained in section 3.8.1.2, quantitative research methodology is distinctive from the researcher's input, that is, the research methodology is based on the evidence gathered in the study (Creswell, 1994b; Sarantakos, 1997). In contrast, both researcher's values and information gathered from the study greatly contribute to the research methodology of qualitative research (Lazarus, 2005; Sarantakos, 1997). Therefore, the adoption of both qualitative and quantitative approaches would eliminate the bias of a single research approach (Creswell & Plano-Clark, 2007).

2.4 Research Paradigm

The research paradigm combines common ideas and understandings among scientists about how issues must be addressed and handled (Kuhn, 1970). According to Ponterotto (2005), the research paradigm provides the foundation for conceptualising and categorising the scientist's research. Although according to Creswell (2009), research paradigms are worldviews that influence the researcher's speciality area. According to Love, Holt, and Li (2002), two significant paradigms seemed superior: interpretivism and positivism. Positivism,

interpretivism, and pragmatic methods are prevalent in the construction management sector according to research by Dainty (2008).

Meanwhile, according to Dainty (2008), none of the methodologies could provide a solid knowledge of what construction management study needs. Thus, a multi-methodology research design is important to provide a clear grasp of the company's challenges, as backed up by Oyewobi *et al.* (2016). Moreover, since construction management research is at the intersection of natural and social science, a combination of qualitative and quantitative techniques is recommended (Love *et al.*, 2002). Table 2.1 compares the four research paradigms in terms of their conceptual foundations.

Table 2.1: Comparison of the four main research paradigms (Creswell, 2009)

Philosophical Assumptions \ Paradigm	Positivism\ Postpositivism	Transformative	Interpretivism\ Constructivism	Pragmatism
Ontology: the researcher's view of the nature of reality or being	The reality is objective and perceived	Rejects cultural relativism; recognises that various versions of reality are based on social positioning; conscious recognition of consequences of privileging versions of reality	Relativistic reality is socially or experimentally based, local, and specific in nature	External, multiple, view chosen to enable answering of a research question best
Epistemology: the researcher's view regarding what constitutes acceptable knowledge	Acquisition of knowledge is not related to values and moral content. Only observable phenomena can provide credible data, facts.	An interactive link between researcher and participants is established; knowledge is socially and historically situated; need to address issues of power and trust	Focus upon the details of a situation, a reality behind these details, subjective meanings motivating actions	Either or both observable phenomena and subjective meanings can provide adequate knowledge dependent upon the research question. Focus on practical applied research, integrating different perspectives to help interpret the data
Axiology: the researcher's view of the roles of values in research	Research is undertaken in a value-free way; the researcher is independent of the data and maintains an objective stance	Respects cultural norms: beneficence is defined in terms of the promotion of human rights and increase in social justice; reciprocity	Research is value bound; the researcher is part of what is being researched, cannot be separated, and so will be subjective	Values play a significant role in interpreting results, the researcher adopting both objective and subjective points of view
Research Methods	Survey, experiment, quasi-experiment	Case studies, convergent interviews	Case studies, interviews, participant observation, action research	Interview, case study, surveys
Data collection techniques	Highly structured, large samples, measurement, quantitative, but can use qualitative	The method chosen must fit the subject matter, quantitative or qualitative	Small samples, in-depth investigations, qualitative	Mixed or multiple method designs, quantitative and qualitative

This research focuses on modelling the performance determinants of construction organisations to enhance performance or competitive advantage. It is located within the construction management domain. Based on Table 2.1, the pragmatic paradigm seems a suitable match for this research. The reasons for this choice are discussed in further detail in the next section.

In a single study, the pragmatic paradigm integrates qualitative and quantitative research methodologies. This study employs a mixed methods strategy. Furthermore, Amaratunga, Baldry, Sarshar, and Newton (2002) proposed that a mixed methods approach is a suitable and desired design that provides a mutual benefit by concentrating on the strengths of both techniques.

2.4.1 Justification of the Pragmatism Worldview

According to Tashakkori and Teddlie (2003), pragmatism is a conceptual framework that underpins mixed methods research. Pragmatism may be split into two periods in history: an early era from 1860 to 1930 and a neo-pragmatism period from 1960 to the present (Maxcy, 2003). Charles Sanders Peirce, William James, John Dewey, George Herbert Mead, and Arthur F. Bentley were early pragmatists (Creswell & Plano Clark, 2017; Sundin & Johannisson, 2005). Interpretations of pragmatism as a philosophical school of thinking have certainly changed through time; the present mixed methods research community's interpretation of this philosophy has varied from that of previous pragmatic philosophers.

Pragmatism is a philosophy of science that emphasises the relationship between reality and activity, which argues that the most conclusive evidence of views is a willingness to act on those beliefs (Fendt, Kaminska-Labbe & Sachs, 2008). When it comes to knowledge and truth, pragmatic thinking concentrates on establishing a link between the two without portraying them as being mutually exclusive. In other words, pragmatic thinking identifies the most urgent current issues in order to generate constructive knowledge and then translate that knowledge

into actions (Fendt *et al.*, 2008). In order to create positive influence within the researched value system, pragmatism urges researchers to examine an attractive and important problem in a manner that they understand and to utilise the findings to generate positive influence within their own value system (Tashakkori & Teddlie, 1998).

In their paper, Fendt *et al.* (2008) stated that gaining scientific information via research provides value to the system by assisting individuals in better understanding how to deal with the social reality or by assisting organisations in creating a more productive working environment. When it comes to the concept of the usefulness or expediency of newly acquired knowledge, Wicks and Freeman (1998) revealed that it could be approached from two perspectives: normative (Does this contribute to the enhancement of research or provide value to the system?) and epistemological (Is the information acquired credible, well-founded, and trustworthy?) Pragmatists believe that it is possible to integrate positivist and constructivist techniques effectively; as a result, pragmatism is generally recognised as the philosophical basis for the mixed methods approach (Denscombe, 2008; Tashakkori & Teddlie, 2011). On the other hand, Johnson and Onwuegbuzie (2004) emphasised that the underlying assumption of the mixed methods methodology is the general belief about knowledge and examination rather than the assumption about the methods themselves. Positivism (a quantitative approach) and interpretivism (a qualitative approach) are the two distinguished approaches of pragmatism. Pragmatists use a variety of methods and values, both qualitative and quantitative, to address problems flexibly, relying on 'what works to do so (Creswell & Plano Clark, 2017).

Creswell (2009) identified three types of pragmatism, in which data is produced by acts, consequences, and situations instead of by formal criteria, such as scientific inquiry (as the post-positivists believe). Creswell (2009) argued that the proper approach must be focused on the research issue rather than on methodological preferences and that this is a serious

observation. It was argued by Tashakkori (2000) and Teddlie (1998) that scholars must use all available techniques in order to shed light on the present issue; as a result, mixed methods appears to be helpful.

According to Creswell (2009), pragmatism serves as a philosophical foundation for research since it has the following characteristics:

- Pragmatism is not restricted to a particular reality paradigm or philosophy.
- Individual researchers have complete authority. Researchers can then select the methodologies, strategies, and processes that best suit their requirements and objectives.
- Pragmatists reject the idea of ultimate oneness in the globe. Likewise, mixed methods researchers use various techniques to gather and analyse data instead of keeping to a single method (e.g., quantitative, or qualitative).
- What is successful at the time is authentic. It is not based on the existence of a duality between reality outside of the mind and reality within the mind. Therefore, in mixed methods research, researchers integrate quantitative and qualitative data to understand the problem under study.
- Pragmatist researchers look into the "what" and "how" of research depending on the expected outcomes (e.g., where they want to go with it). Mixed methods researchers must develop a reason for combining quantitative and qualitative data in the first place and an aim for mixing quantitative and qualitative data in the second place.
- Research, according to pragmatists, can take place in a wide range of contexts such as the social, historical, political, and other fields of study. Research using mixed methods may have a postmodern bent, with a theoretical viewpoint that is concerned with social justice and political objectives as well as scientific inquiry.

- Pragmatists believe in both an outward world that exists independently of the mind and an internal reality inside the mind. They do think, however, that we should cease questioning reality and natural rules.

Pragmatism encourages mixed methods researchers to use various methods, distinct perspectives, different theories, and diverse ways of collecting and analysing data. Even though the pragmatic paradigm opposes the notion of a top-down movement from epistemology to methodology to technique, as proposed by Creswell (2009) and Creswell and Plano Clark (2017), it does not decrease the chance of shifting between paradigms when using various techniques. According to these researchers, pragmatism may serve as an overarching paradigm for a mixed methods programme or sequential design. Post-positivism or constructivism could influence quantitative and qualitative phases.

The discussed notions provide researchers with a realistic framework to address research issues by using methods that could yield relevant and usable knowledge. It was largely compatible with evolving project ideas and objectives of this thesis during the planning stages, and it could be utilised to steer a mixed methods research programme.

2.5 Research Approaches

Construction management is a broad area of research that relies on various areas to lend credibility, including social sciences, natural sciences, management, and engineering (Dainty, 2008; Fellows & Liu, 2015). Based on the four distinct paradigms shown in Table 2.1, it is clear that each method has its own set of benefits and drawbacks. There is no one-size-fits-all method for doing research. It is just a matter of meeting halfway (Amaratunga *et al.*, 2002). The research method used is determined by the nature of the issue to be answered, the kind of data available, and the findings to be made. Before deciding, several research methods were

investigated to help determine the best appropriate strategy for data collection, analysis, and interpretation for this project.

2.5.1 *Quantitative Research Approach*

Positivism, which deals with proven facts, is especially linked with the quantitative research method. Positivism's basic philosophy is based on the idea that social facts can describe human behaviour, which can be investigated using natural science methods that use deductive reasoning (Amaratunga *et al.*, 2002). According to Neuman (2014), positivism is associated with a number of social theories, the most prominent of which are rational choice, structural-functional, and exchange-theory frameworks. Positivism takes the shape of empirical and philosophical realism, adhering to a logical, hypothesis-testing method (Ponterotto, 2005). Positivism favours exact quantitative techniques, such as tests or questionnaires, which produce information and are analysed using descriptive statistics (Neuman, 2014). Quantitative researchers favour precise measurements and objective inquiry, in which ideas are evaluated to determine reality's nature. It is also believed that results from a research sample may be extrapolated to the whole population. The two research theories contained under the positivist paradigm are behaviourism and empiricism (Amaratunga *et al.*, 2002; Neuman, 2014).

The use of a survey to extract information, the use of accurate, reliable measurements, the validation of assumptions, and the production of representative data via random sampling are all part of a quantitative research method (Stiles, 2003). The following are the basic assumptions of a qualitative method (positivism approach) as summarised by Lincoln and Guba (1985):

- The objectives of social and natural sciences should be the same: to find rules that contribute to understanding and forecast.

- The same approach (i.e., the hypothetic–deductive method) should be used in social and scientific sciences.
- Concepts must be defined by empirical categories.
- Nature is consistent in both time and place (speaking to the existence of a true, identifiable reality).
- Natural laws are deduced from facts.
- A large sample eliminates peculiarities in data, revealing broad causes or natural laws.

Quantitative research also looks at distinguishing features, elemental qualities, and empirical limits, emphasising how frequently it happens (Nau, 1995). Awodele (2012) concluded that the quantitative method is appropriate for validating, explaining, and testing hypotheses in research because of its appropriateness in assessing behavioural aspects of the built environment.

2.5.2 *Qualitative Research Approach*

Phenomenological analysts' philosophical foundation is provided by the hermeneutics theory, which is central to qualitative research's approach. As an example of textual data, it emphasises the need for reading and investigating it thoroughly (Neuman, 2014). Qualitative researchers, such as Greener (2011), think that the outside world can only be accessed via constructs. Since it believes in the social construction of the world via the interpretation of those who live in it, interpretivism relies on individuals' unique interpretations of given facts. Ardley (2008) also argued that the individual's experience and the connections between human consciousness and natural world objects are considered.

Furthermore, interpretivism proponents would believe that the current theory of organisational strategies and characteristics cannot expect to convey anything significant about the social

reality by depending only on rationalist methods in the social sphere (Dainty, 1998). There is no consideration of the multidimensional nature of an organisation's performance and characteristics in positivist research, according to Dainty (1998). They also run the danger of restricting the investigator to well-known, simple findings or occurrences. There were reasons in favour of a phenomenological method that the researcher was aware of. Since interpretivism is not at the core of this research, some conclusions are influenced by the phenomenological concept of looking for prominent organisational characteristics that show the complexity of those organisations' performance.

According to the scholar, the reality is a complicated web of competing theories. There are no two organisations that are precisely the same or have exactly the same characteristics; each one is a unique creation. That is why the interpretative method has to be used in this study in order to fully grasp the complex character of organisational performance, and the role played by chosen performance variables.

2.5.3 Mixed Methods Approach

Mixed methods research approaches that include a variety of techniques are becoming more popular. The mixed methods technique, which involves integrating quantitative and qualitative data, is often regarded as the most effective way to address research issues in the social sciences (Johnson, Onwuegbuzie & Turner, 2007; Molina-Azorin, 2012). Using the following composite broad definition of mixed methods research approach, Johnson *et al.* (2007: 123) proposed the following:

"Mixed methods research is 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."

Christ (2009) made the argument that "More than just methods, mixed methods research incorporates both quantitative and qualitative research techniques. As a result, mixed methods take into account paradigms and philosophical assumptions, as well as theoretical views, research objectives, and interpretations of findings. In summary, mixed methods research encompasses the whole of all stages of the research process, rather than simply the methods themselves." Using a more specific definition, Johnson *et al.* (2007: 123) defined mixed methods research as "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."

According to Boyd, Finkelstein, and Gove (2005), quantitative and qualitative research approaches complement one another. It is possible to advance the subject of strategic management ahead more rapidly by combining excellent research from both perspectives. Love *et al.* (2002) also stated that if construction management scientists are to offer approaches to the challenges that the construction industry is facing, they must adopt a rigorous philosophical approach that integrates both ontological and epistemological perspectives. They concluded that unless such a position is adopted, construction management academics will be unable to completely comprehend the variables that affect organisational and project performance in the construction industry. Dainty (2008) highlighted that most construction management studies might be classified as sociological research, which is concerned with understanding the structure and complicated nature of relationships that form the industry and the construction industry itself. He claimed that a single approach could not properly show the intricate structure of these connections because of their interconnectedness.

Therefore, in order to improve the quality of the findings, this study employs a mixed methods approach, which capitalises on its advantages. The employment of mixed methods may increase the trust and credibility of findings and the validity of those outcomes while simultaneously increasing the originality and innovation of the methods (Easterby-Smith, Thorpe & Jackson, 2012). Easterby-Smith *et al.* (2012) went on to say that by combining confirmatory and exploratory research at the same time, mixed methods may aid in the synthesis and integration of ideas. This will result in a wider variety of viewpoints and better conclusions, according to the authors. However, there have been some criticisms of the approach in certain areas, such as its replicability and relevance of the study design in answering the research questions. On the other hand, this study addressed such concerns via the use of a well-chosen research design.

2.6 Research Approach and Strategy Adopted for the Study

The selection of an appropriate research approach for examining the connection between the variables requires careful consideration. In order to make this decision, the researchers looked at many aspects, including the primary question to be addressed by the research, the reasonable analysis of the nexus between the data to be collected, and the rational analysis of the findings. As a result, the pragmatic approach was deemed to be the most appropriate for this investigation. When it comes to research, pragmatism is a strategy that tries to explain the employment of both qualitative and quantitative approaches in study (Bryman, 2006). The main goal of the research was to investigate the determinants that influence organisational performance and determine the nature of the connection between the constructs under consideration. In order to accomplish this goal, the pragmatism approach was used. This approach has been shown to effectively describe the behavioural element of the built environment or construction management research and measure the built environment's descriptive aspect (Amaratunga *et al.*, 2002). According to the literature, both qualitative and

quantitative approaches are often used in construction management research studies (Amaratunga *et al.*, 2002; Dainty, 2008; Love *et al.*, 2002). It has also been claimed that a qualitative approach is the most appropriate approach for addressing the complicated problem of organisational performance (Amaratunga *et al.*, 2002).

Some research on strategic management in the construction industry, on the other hand, has used a single quantitative approach (e.g., Kale & Ardit, 2003; Pamulu, 2010; Tan *et al.*, 2012). According to Amaratunga *et al.* (2002) and Ankrah (2007), a quantitative approach is suitable for this level of research, since the goal is to add a fresh viewpoint to an existing body of information basis of studies at this phase. To fully understand the complexity of the construction industry, Dainty (2008) and Love *et al.* (2002) stated that construction management research must take a multi-methodology approach that draws on the strengths of both approaches. Following this statement, the mixed methods approach is deemed suitable for this research since the conclusions obtained will provide a more profound knowledge of the underlying phenomena that are being assessed.

In their study of mixed methodologies research, Creswell and Plano Clark (2017) identified six research techniques that may be used. Christ (2009) emphasised that mixed methods research allows the researcher to address the study questions by combining various types of information. As a result, the choice of research design is influenced by the nature of the research problem as well as the rationale for combining different methods (Creswell & Plano Clark, 2017). The convergent parallel design, the explanatory sequential design, the exploratory sequential design, the embedded design, the transformational design, and the multi-phase design are some of the mixed methods techniques that may be used to create helpful frameworks for researchers. Because it is beyond the scope of this thesis to describe all of the various design options that

mixed methods research offers, the researcher will limit himself to discussing just the multi-phase design that was utilised in this study.

2.6.1 Multi-phase Design Strategy

As defined by Creswell and Clark (2017), the multiphase mixed methods design is used when a subject is investigated via a number of sequential research phases. Each approach builds on the previous information, helping to the ultimate programme goal. They believe that pragmatism is often the soundest philosophical basis, with quantitative strands inspired by post-positivism and qualitative strands inspired by constructivism. There is a discussion of the following advantages and disadvantages of the multiphase mixed methods design type that is important to this research:

Strengths

- “It incorporates the flexibility to employ the mixed methods design elements needed to address a set of interconnected research questions.
- Researchers can publish the findings of individual studies while also contributing to the broader assessment or research programme.
- The researchers may use this design framework to perform numerous iterative investigations over a period of several years

Weaknesses

- The analyst must predict the difficulties that are often connected with individual concurrent and sequential approaches within a single or subsequent phases.
- The researcher must have adequate resources, time, and effort to execute many stages over a number of years effectively.

- Furthermore, the researcher must think about how to effectively link the various studies together, as well as how to combine quantitative and qualitative strands within phases."

In a multi-phase design, the analyst incorporates both sequential and concurrent strands throughout a length of time specific to the study (Creswell, 2009). Multi-phase mixed methods design comprises a series of qualitative and quantitative research (three or more) that are carried out sequentially or concurrently (Creswell *et al.*, 2003; Johnson *et al.*, 2007; Teshakkori & Teddlie, 1998). Multi-phase research, as opposed to sequential or concurrent investigations, often has a longer design arc. Multi-phase research, including qualitative, quantitative, and qualitative components, such as QUAL-QUAN-QUAL, begins with a qualitative study that informs a quantitative survey (i.e., exploratory design), followed by a second qualitative design that is used to explain the quantitative results (i.e., explanatory design).

To achieve this goal, the researchers conducted an extensive study to get a thorough knowledge of how performance factors affect organisational performance and the interactions between the chosen key determinants. The goal of the multi-phase design is to address a collection of progressive study issues that all contribute to the advancement of a single programmatic research goal (Creswell, 2009). Considering the context of this study, these multiple phases may be associated with phases for determining determinants, specifying them for the New Zealand construction industry, analysing the effect of each determinant on organisational performance (linear relationships), and understanding the interrelationship between all determinants and overall organisational performance (PLS-SEM).

As Creswell (2009) pointed out, in addition to matching the design to a series of research questions, a multi-phase research design should be selected based on the following factors as well: First and foremost, a single mixed methods study will not be sufficient to achieve the long-term programme goal of the study. Because the findings of this study follow a clear

sequential framework, it fits under this kind of research. Secondly, the analyst is undertaking a mixed methods project that is in the early phases of development, and new issues emerge at various stages of the project's development. For instance, choosing the key determinants for the same industry from the previous phase is required in order to analyse the connections between the chosen factors and the organisational performance in the New Zealand construction sector during the previous phase. Figure 2.1 depicts the multi-phase architecture that was utilised in the current research.

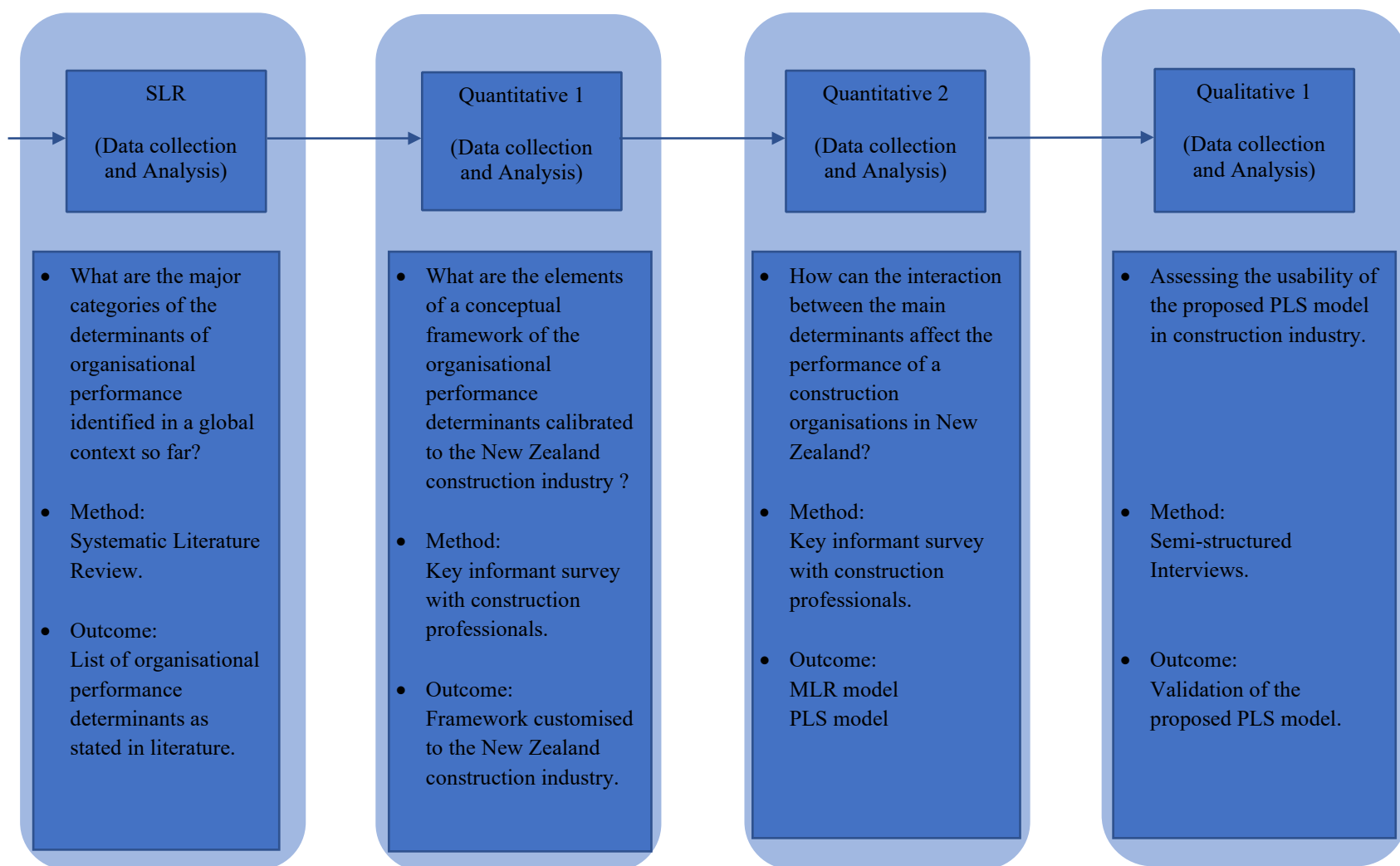


Figure 2.1: Flowchart of the basic procedures in implementing a multiphase design

2.7 Research Design for the Current Study

The overall research design (see Figure 3.9) of this study is explained in line with the research onion concept proposed by Saunders et al. (2007). The research philosophy belongs to the pragmatist paradigm. This research uses both qualitative and quantitative approaches. Surveys are employed as research strategies comprising both qualitative (interviews) and quantitative (questionnaire survey) methods. In terms of the research process, the study began with questionnaire survey which was then followed by another questionnaire survey to gather information from a wider spectrum of stakeholders in the construction industry. Finally interviews with construction professionals validated the proposed PLS model. Having positioned the research design, subsequent sections of the chapter discuss the data collection process for this study.

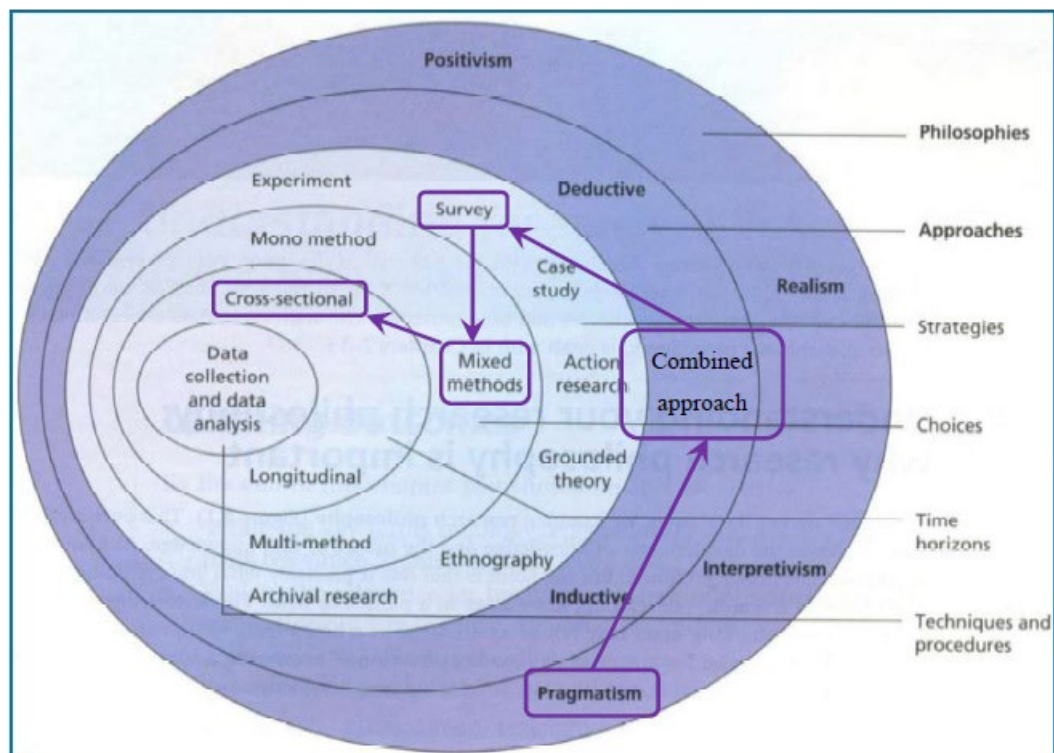


Figure 2.2: Research design for the current study (Research Onion)

Adapted from (Saunders et al., 2007)

2.7.1 Data Collection

As was previously explained, the current study uses a mixed methods research approach with both qualitative and quantitative data collection conducted in multi-phases. In addition, the study used both qualitative and quantitative data analysis techniques. The first phase of the data collection process involves the systematic review of the past literature on the research problem investigated. This first phase was useful to identify the determinants of construction organisational performance as stated in the literature (see Chapter 3). The second phase was a questionnaire survey. Extensive and rich quantitative data were gathered from those questionnaires resulting in a specified conceptual framework for the New Zealand construction industry (see Chapter 4). The quantitative information gathered was then followed by a New Zealand-wide questionnaire survey. The second questionnaire survey aimed to measure the significance of the main determinants derived from the first set of questionnaires. This was the third phase of the data collection process (see Chapters 5-7). The final phase of data collection was semi-structured interviews aimed at validating and extending the findings from the questionnaire survey (see Chapter 8).

2.7.2 Sampling Approach

Understanding appropriate sampling techniques for any research enables the researcher to plan the data collection and analysis stages. Patton (2002) shows that predominantly, there are two sampling approaches: probabilistic and non-probabilistic sampling. Probabilistic sampling involves randomization to ensure that all elements in the population have some chance of being included in the sample and moreover, the mathematical probability that any one chosen element can be calculated.

Non-probability sampling selects population elements according to what specifically the researcher is looking for, and the availability of such population elements (Babbie, 2012;

Bryman, 2012). However, it cannot be argued that non-probability sampling is not representative of the population selected, and it is independent from the probability theory (Jackson & Trochim, 2002).

Babbie (2012) and Gray (2009) comment that the selection of an appropriate sampling strategy depends on the scope of the study and the research methods employed. In this context, the study reported here employed both probability and non-probability sampling techniques. The first phase of this study employed snowball sampling for its SLR (nonprobability). The second and third phases (questionnaire survey) of this study used simple random sampling (probability). Lastly, for the fourth phase of the study (semi-structured interviews), purposive sampling was used. A detailed explanation of the selected sampling techniques is presented in the following chapters.

2.7.3 Data Analysis

Data analysis refers to a body of methods that helps describe facts, search for patterns, develop explanations, and test hypotheses in collected data, which results in the identification of recurrent behaviours and objects. Neuman (2003) identified that the process of data analysis comprises examining, sorting, categorizing, evaluating, comparing, synthesizing, and contemplating information in reviewing raw and recorded data. This section presents the data analysis process and techniques used to analyse the quantitative data collected from the questionnaire survey and the qualitative data collected from the semi-structured interviews.

Quantitative data analysis

A number of tools (software) have been developed to enable fast and accurate quantitative data analysis. However, a software-based analysis should be used with care, since these tools have both strong points and weaknesses (Lee & Fielding, 1991). Predominantly, computer-based

tools have the advantage of handling a large volume of data rapidly. Also, data manipulation and widespread data displaying behaviour are facilitated by such computer software in analysing quantitative data (Graham, Cumsille, & Elek Fisk, 2003). As a result, the entire data analysis process becomes comprehensive, transparent, and replicable, with a higher degree of reliability and validity.

SPSS was used to analyse quantitative data with the intention of performing factor analysis and displaying the results in variety of graphical formats (see Chapters 5 and 6). SmartPLS is a very powerful computer aided software package used to analyse quantitative data to build the SEM-PLS model (see Chapter 7).

2.7.4 Credibility of the Research Findings

Credibility measures the trustworthiness of the research findings (Guba & Lincoln, 1994). Having trustworthy information as research data is a very important aspect of successful research. Credibility of research is evaluated in terms of the validity, reliability, and generalizability of the research findings (Saunders et al., 2011). Subsequent sections explain how the current research attempted to gain a high degree of credibility for the research findings.

Validity

The validity of research findings can be assessed based on the accuracy of the instruments employed in the data collection, and the degree of achievability of the aim of that survey instrument (Amaratunga et al., 2002). Research validity has two main aspects: internal validity and external validity (Gill & Johnson, 1991; Yin, 1994). Internal validity ensures that a researcher is really examining what was meant to be examined, while external validity is the degree of generalizability of research findings (Amaratunga et al., 2002). The internal validity

of a survey instrument can be examined in terms of content validity, construct validity and criterion-related validity (Fink, 2009; Saunders et al., 2011).

Content validity refers to the degree of coverage of the research questions from the survey instrument. The current research established the research problem from a comprehensive systematic literature review. The research questions were designed to address the research problem through a questionnaire survey and semi-structured interviews. It was ensured that the semi-structured interviews and questionnaires could answer the insufficient complexity of all the research questions. This was verified by the help of research supervisors and an associate professor in business in the subject area of business research methods. Also, the pilot survey contributed to improving the validity of the research findings.

Construct validity denotes how attitude and aptitude scales are measured by the questionnaire. Criterion-related validity measures the capability of questions in the questionnaire to make accurate predictions. Construct validity and criterion validity were not applicable in the current research.

Having multiple data collection methods to address the research problem also improved the reliability of the research findings (Denscombe, 2003; Saunders et al., 2011). With this in mind, this research employed a questionnaire survey which was validated through semi-structured interviews. This triangulation method further assured the validity of the research findings.

Reliability

Consistency of research findings refers to the reliability, which can be assessed through retesting the test, maintaining internal consistency, and having an alternative way of data collection (Saunders et al., 2011). Re-testing requires conducting the data collection twice under similar conditions. However, for the current research, conducting a New Zealand wide

questionnaire twice and semi-structured interviews were not feasible within the given time frame and limited available research funding.

Internal consistency relates to the consistency of the responses across the questions in a survey. the current research tested the Cronbach's α value in the quantitative analysis process to ensure that the questionnaire responses were internally consistent ((Bryman, 2012; Saunders et al., 2011). Generally, a Cronbach's α value above 0.70 is an accepted test for scale reliability (Nunnally, 2010). Chapters 5 and 6 discuss further detailed information on the internal reliability of the questionnaires.

The reliability of the interviews conducted was based on the degree of question standardisation and accuracy of the responses provided by participants. The semi-structured interviews were guided by indicative questions in the current study to ensure reliability. All the participants selected for interviews were well experienced and well established in the New Zealand construction sector (see profiles of participants in Chapter 8). Therefore, it can be argued that the research findings from the interviews are reliable. Also, strategies such as guiding participants through participant information sheets prior to interviews, and transcribing interviews soon after the interview took place to enhance the reliability of the interview findings.

2.8 Ethical Considerations

During the design and execution of the research, the investigator gave significant consideration to the ethical soundness of the methods that were suggested. According to Shah (2011), ethics is generally described as a set of rules for behaviour that distinguish between acceptable and undesirable behaviour. Ethics concerns were taken into account as part of a system or viewpoint that was utilised to determine how the research should be carried out in this instance. According to Ajayi (2012), researchers who adhere to ethical standards would improve the credibility of

their studies and the conclusions they reach. In order to achieve this, the conduct of this research was guided by ethical concerns such as honesty, integrity, informed consent, secrecy, carefulness, and the right to remain anonymous (Leedy & Ormrod, 2015; Resnik, 2007; Shah, 2011).

For this reason, the researcher made certain that the participants were well aware of the study's details from the outset of the investigation. The research was structured in such a way that participants would remain anonymous and that any information they gave would remain private. The identities of the participants have not been revealed in order to maintain the confidentiality of the proceedings.

Prior ethical approvals were provided for this research by the AUT University Ethics Committee. Two ethical approvals were granted numbered: 19\154 (9 May 2019) for the first questionnaire survey and 20\104 (4 June 2020 and 12 April 2021) for the second questionnaire survey and interviews, respectively.

2.9 Summary

The methodological foundations of the study were described in detail in this chapter. Adopting a multi-phase mixed methods approach, the researchers collected information from participants using a quantitative questionnaire for the quantitative strand and semi-structured interviews for the qualitative strand. Though due to the constraints of the thesis, the analysis of the topics is inevitably restricted in scope, it is intended to explain some of the views guiding this study as well as the philosophy behind the research methods of the study phases in the following chapters. The findings of the first quantitative data analysis are presented in the next chapter, along with a summary of the results.

Chapter 3 DETERMINANTS OF ORGANIZATIONAL PERFORMANCE IN CONSTRUCTION

This chapter is extracted from:

- Alqudah, H, E., Poshdar M., Rotimi, J. O. B., Oyewobi, L., & Tookey, J. (2021). Determinants of organizational performance in construction: a merged critical analysis and systematic literature review.
- Alqudah, H., Poshdar, M., Rotimi, J. O., & Oyewobi, L. O. (2018). Determinants of construction organisations' performance: a systematic literature review. Proc., 42nd Australian Universities Building Education Association (AUBEA).

3.1 Prologue

This chapter aims to provide insights into organisational performance determinants in the construction industry. It adopts a systematic literature review (SLR) approach to identify and critically analyse the main determinants of organisational performance in the construction industry (Objective 1). The SLR approach resulted in 1,081 articles in the first step, and a final sample of 95 articles was synthesised. These articles were analysed in terms of annual publications, authors contributions and most frequently cited articles. All of them examined organisational performance in the construction context and recorded 32 main determinants. A critical analysis of the determinants was then performed to rigorously explore, analyse, and summarise the research trends of organisational performance in the construction industry. The review identified resources and capabilities, diversification, and competitive strategies as key determinants of organisational performance. These results could assist managers of construction companies to become aware of how the selected performance determinants could influence their competitive advantage and achieve superior performance. It, therefore, has implications for management practitioners, and it contributes to the discussion around the causes of performance differentials between construction organisations.

3.2 Introduction

Even within the same industry and between apparently similar organisations, there are observable differences in performance (Alqudah *et al.*, 2018). It can be explained by several factors that influence organisational performance (Oyewobi *et al.*, 2017). Organisations tend to seek continual performance enhancement, and this quest is vital to help them compete successfully and remain sustainable in ever-changing and competitive industries (Rudd, Greenley, Beatson & Lings, 2008). The reasons for performance differences between organisations have been investigated, and this has generated theoretical and empirical disagreements in the sphere of mainstream strategic management research (Hawawini, Subramanian & Verdin, 2003). The field of strategic management is a comparatively young discipline that has developed over the past five decades. During this time, it has gradually consolidated, and there has been a simultaneous expansion in the range of topics and research approaches. In order to explain the factors underlying the competitive advantage and success of firms, several theories and approaches have been expounded that address different research topics (Hoskisson *et al.*, 1999, Ketchen *et al.*, 2008).

“Competitive advantage” has received considerable attention from strategic management researchers since the 1960s. It refers to the superior attributes of an organisation that add value to its products and services, and therefore the attributes that allow an organisation to gain an advantage over the competitors with which it shares a niche (Lynch, 2012). Competitive advantage is important for an organisation to grow sustainably and succeed within the global connectedness and dynamic competitiveness that characterises the modern world (Flanagan Lu, Shen & Jewell, 2007).

Three leading schools of thought have dominated competitive advantage-related research, and these have been applied to the construction sector (Flanagan *et al.*, 2007). The first is Porter’s

(1980) competitive advantage and competitive strategy models. These models contend that the competitive strategy adopted to neutralise threats or exploit opportunities within an industry confers a competitive advantage (Betts & Ofori, 1992; Langford & Male, 2008; Porter, 1980, 1985). The second includes the resource-based view and the core competence approaches, postulated by Barney (1986) and Hamel and Prahalad (1996). These views rest on the contention that a firm is a compilation of resources, and its ability to use the resources dictates its performance (Barney, 1991). The third is the approach of strategic management, which contends that the long-term performance of an organisation is determined by the managerial decisions and actions that result from encouraging strategic thinking and from dealing with variation in its business environment (Venegas & Alarcon, 1997; Wheelen & Hunger, 2002).

As the explained schools of thought gained prominence, the construction sector absorbed theories about what influences the competitiveness of firms. This industry has traditionally been considered heterogeneous, so researchers paid attention to when it introduced, adapted, and applied these theories. A quick review of the literature shows that the adoption of Porter's theory by the industry was examined by Male and Stocks (1991), Betts and Ofori (1992, 1994) and Langford and Male (2008). The incorporation into the construction industry of the resource-based view and the strategic management approach received research attention from Kale and Arditi (2002) and Newcombe *et al.* (1990).

There is a saying that "you cannot improve what you cannot measure". Upon this foundation, the prevailing research seeks to obtain a measure of construction companies' degree of competitiveness. The models mentioned above provide varying degrees of insight into such matters. Literature suggests that there are three levels at which the performance of construction organisations can be measured: the project level, the stakeholder level and the organisational level.

The creation of a performance measurement system began at the level of the project (Yang *et al.*, 2010); a project's cost, quality and time were considered as its primary performance indicators (Kagioglou, Cooper, & Aouad, 2001). Over the decades, the measurement target expanded to include stakeholder and organisational levels (Wang & Huang, 2006). Measures at the stakeholder level hone in on relationships between contracting parties, for example, owners, contractors and consultants, and there are evidential links between project success and stakeholder performance (Wang & Huang, 2006).

The present thesis focuses on the organisation level, at which performance determinants become multi-dimensional rather than focusing on single dimensions at the project or stakeholder levels. Instead, multiple projects are implemented concurrently, and multiple resources are required (Lin & Shen, 2007). The importance of identifying them applies to global market sectors. In the construction industry, the organisation's level of performance dictates its survival chances in a competitive business environment (Tan *et al.*, 2012).

Several measurement concepts have been developed to measure performance at the organisational level. These including key performance indicators (KPI) in Bhatti, Awan and Razaq (2014), the balanced scorecard (BSC) model in Adhiprasanggaa, Sarib, Putrac and Wibisonod (2016) and the European Foundation for Quality Management (EFQM) Excellence Model (Lin & Shen, 2007; Vukomanovic, Radujkovic & Nahod, 2014).

3.3 Study Design

This research is part of a more extensive study examining the relationship between the main performance determinants and the organisational performance in the New Zealand construction industry. The present research is comprised of three phases, as depicted in Figure 3.1. In phase 1, a broad literature search identified studies that were most relevant to the aim of the research. A systematic literature review (SLR) was undertaken to collect and compile existing

information on the determinants of organisational performance. It is a recognised method to investigate literature and comprehensively justify outcomes in a replicable way (Shi, Ding, Zuo & Zillante, 2016). This phase applied the procedure used in the seminal study by Shi *et al.* (2016) as the main guideline for conducting the SLR. Phase 2 involved analysing the descriptions and content of the selected literature. Phase 3 synthesised and mapped the critical organisational performance research based on the SLR findings. More details of each phase are discussed in the following sections.

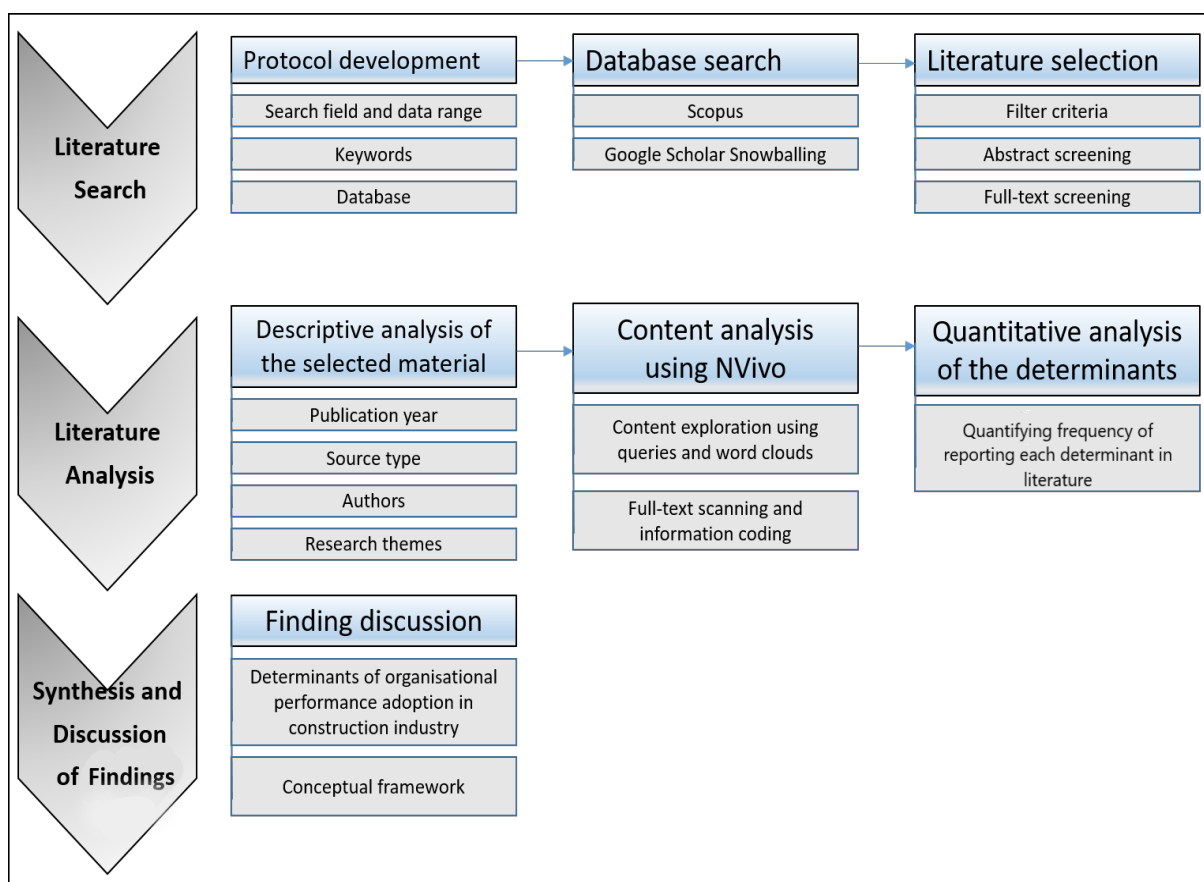


Figure 3.1: SLR study design

3.4 Literature Search

The three main activities in this phase of the study covered protocol development, database searching and literature selection. These activities are described in the following subsections.

3.4.1 *Establishing a Search Protocol*

The search protocol illustrated the SLR's planning document. It involved a comprehensive description of the primary elements of SLR: the research aims and questions, relevant databases, keywords and criteria for inclusion or exclusion, as recommended by Borrego, Foster and Froyd (2014). A team of four of this study's authors collaboratively developed the protocol, and the team refined the document iteratively throughout the review process. It helped to ensure it was valid and replicable. The protocol that was established facilitated discussions between the team members in the early parts of the study.

Careful attention was given to identifying the search keywords and inclusion criteria to ensure the research was comprehensive. The search focused on papers published in construction-related journals, with no restrictions on publication date that ensured the soundness of the study's conclusions. The search fields included title, abstract and keywords. The inclusion criteria were limited to peer-reviewed publications for quality-assurance purposes, as recommended by Burgess, Singh and Koroglu (2006). Therefore, grey literature such as technical reports and works in progress was excluded. The exclusion of grey literature can curtail the powers of recent or ongoing research, but it increases the quality of results (Gimenez & Tachizawa, 2012; Lagorio *et al.*, 2016).

The final selection criteria were established as follows:

- Include papers that explore the determinants of performance at an organisational level within the construction industry. All the potential synonym wordings were also involved.

- Keywords: (Determinants OR Source OR Cause OR Effect OR Influence) AND (Performance OR Effectiveness OR “Competitive Advantages”) AND (Construction) PRE/5 (Organisation OR Company OR Firm OR Contractor).
- Areas of search: Titles, abstracts, and keywords.

“*Construction*” is a generic word that can be found in a range of contexts, so the search for it was limited to instances in which there were no more than five words between the word “construction” and “*Organisation OR Company OR Firm OR Contractor*”. It ensured the keywords would be contained in the same sentence and kept the search results within the research scope.

3.4.2 Database Search

The Scopus database provides broad coverage of the foremost journals and conferences in the field of construction management. Because of this, it was the primary source from which data was collected. The search resulted in 1,081 documents on Scopus.

3.4.3 Literature Selection

The third activity in the study phase involved a two-level skim-and-scan technique for titles and abstracts. The first level screened titles and abstracts to filter out studies that were outside the research scope. In this process, the number of selected articles was narrowed down to 129. Afterwards, the full text on the returned articles was scanned using NVivo. It provided in-depth investigations into the performance determinants in construction organisations. Some publications discussed the determinants of organisational performance without these determinants being linked to the construction industry/organisation context. Although these publications could contribute useful information to the field, they were excluded from the SLR to remain consistent and avoid any bias in the screening process.

A backward and forward snowballing technique was used to cover the critical references, following Jalali and Wohlin's (2012) suggested approach. Backwards snowballing identified articles that had been cited within the selected publications, whereas forward snowballing identified publications that had cited the publications being screened (Jalali & Wohlin; 2012). The new findings were analysed, and categorised, and full-text screening was performed by using the same criteria applied to the abstract section. After the filtering criteria were all applied, the final number of selected articles came to 95. These were all progressed to the next stage: analysis of description and content.

3.5 Literature Analysis

The second phase of the study used descriptive and content analysis of the 95 selected articles. The articles' publication years, regional coverage and authors were summarised in a descriptive analysis. The articles were then explored in-depth, which enabled a quantitative investigation of the organisational performance determinants. The following subsections describe the literature analysis findings.

3.5.1 Descriptive Analysis

Time Distribution of the Selected Articles

In the first phase of this study, 1,081 articles discussed determinants of construction performance. The number of such publications each year gradually increased from 1 in 1975 to 94 in 2020.



Figure 3.2: Chronological distribution of findings

As illustrated in Figure 3.2, the amount of research on determinants of performance at the organisational level increased substantially over the last ten years (2010 –2020), with a total of 850 articles in that decade. In contrast, only 46 were published in the 1990s. The number of such articles peaked in 2019 with 110 published articles.

Authors' contribution

The publications were analysed further to determine how each country and researcher contributed to the research. The findings were ranked quantitatively, following the approach used by Howard *et al.* (1987). Howard *et al.* (1987) suggested that in a multi-authored paper, the share of each author could be established by introducing a score factor in the proposed formula (Equation 1) that reflects the contribution of each author. It assumes that the named order (first above the second, second above the third, and so on) accurately reflects the true contribution. Tsai and Wen (2005) corroborated the formula by using it in the science education field.

$$Score = \frac{1.5^{n-i}}{\sum_{i=1}^n 1.5^{n-i}} \dots\dots\dots \text{Equation 1}$$

Here n is the total number of authors, and i represents the place that the specific writer takes in the order of author names. Each paper has a score of one point, and Table 3.1 provides a detailed score distribution based on the formula for authors.

Table 3.1: Score matrix for a multi-author paper (Howard et al., 1987)

No. of writers	Order of specific writer				
	1	2	3	4	5
1	1.00				
2	0.60	0.40			
3	0.47	0.32	0.21		
4	0.42	0.28	0.18	0.12	
5	0.38	0.26	0.17	0.11	0.08

Scholarly papers and research reports are vital communication channels between academia and industry (Cohen, Nelson & Walsh, 2002). In any given country, the extent to which research into industry innovation and practices has progressed may be reflected in the number of academic research publications originating from that location (Hong, Chan, Chan & Yeung, 2012). Thus, this study considers a publication's geographic location to obtain a broad view of the current status of each country's industry practices associated with construction industry organisational performance determinants. It was calculated by accumulating a score for each author dedicated to research from a specific country or region (see Table 3.2).

Table 3.2: Top 10 Research origin of published papers.

Country/region	Institute/University	Researchers	Papers	Score
Australia	7	9	12	6.32
Turkey	3	8	8	5.34
UK	7	11	8	4.38
Indonesia	4	8	5	4.05
Malaysia	2	11	4	3.88
South Africa	1	3	7	3.78
USA	7	8	8	3.70
China	4	8	4	3.00
Nigeria	2	5	5	2.90
Hong Kong	4	7	5	2.64

As observed in Table 3.2, researchers and institutions in 10 countries contributed to at least four articles. Statistics reveal an increase in authors from different countries involved in

research on the determinants of organisational performance. It is observable in Table 3.2, and more evidence to support this assertion can be seen in Table 3.3.

Table 3.3: Researchers involved in at least three papers

Researcher	Papers	Score	Affiliation
Luqman Oyekunle Oyewobi	7	3.19	Federal University of Technology, Nigeria
Abimbola Olukemi Windapo	7	2.16	University of Cape Town, South Africa
James O. B. Rotimi	6	1.20	Auckland University of Technology, New Zealand
David Arditi	5	1.64	Illinois Institute of Technology, USA
M. Talat Birgonul	5	0.96	Middle East Technical University, Turkey Illinois Institute of Technology, USA
Zeynep Isik	4	1.66	Middle East Technical University, Turkey
Irem Dikmen	4	1.25	Magadan Institute of Economics, Turkey
George Ofori	3	1.80	Middle East Technical University, Turkey National University of Singapore, Singapore Queensland University of Technology, Australia
B. Trigunarsyah	3	0.62	King Fahd University of Petroleum and Minerals, KSA

3.5.2 Content and Quantitative Analysis

Researchers use content analysis to determine the presence and quantity in text of specific words, concepts, or themes (Neuendorf, 2017) and analyse the relationships between them. It is a method that can be used alongside research methods that are qualitative, quantitative, or mixed. It was used in the current study with the assistance of NVivo software (QSR International). NVivo is a software package for qualitative data analysis, which is useful with SLR qualitative analysis. The software allows the user to import, code, edit and review textual data and enables searches for a combination of words and patterns in the coding (Hilal & Alabri, 2013). NVivo is often employed in the construction field for the content analysis of review studies, for example, in Lu and Yuan (2011).

The study included queries regarding the full texts of the 95 papers found after the abstract screening with the following keywords: determinants, source, cause, effect, or influence. A list of documents that contained one or more of the keywords was generated by NVivo. All the

reported determinants were identified by scanning the findings of the queries, and each was then allocated to a node in NVivo. For the subsequent round of content analysis, the nodes were used as queries. For each node query, results were scanned manually, and information was assigned to the appropriate node. If a new determinant was discovered, it was allocated to a new node. Then a further query was run for the new nodes. The process was reiterated until all of the articles' reported determinants had been characterised. The full text of articles was scanned to complete the process and validate the NVivo findings. It also enabled any information that had been missed during the queries process to be identified.

The quantitative features of the software allowed the results to be ordered according to how frequently they were found. Figure 3.3 lists the identified determinants in order of how frequently they were reported in the selected articles.

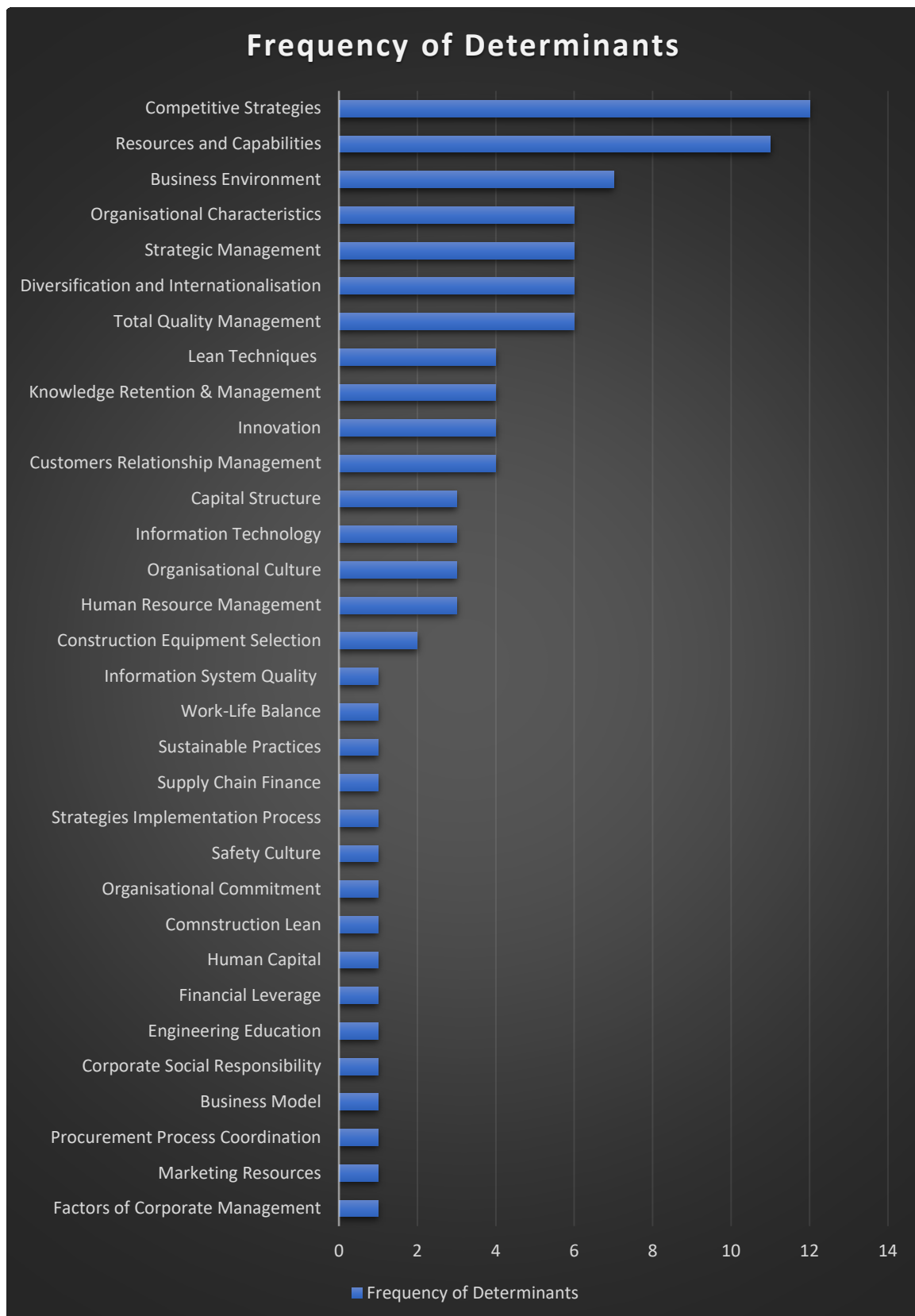


Figure 3.3: Analysis of organisational performance determinants in the construction industry

3.6 Discussions

The conceptual framework developed as a result of the study investigation is presented in this section. It outlines the relationship between the selected determinants and competitive advantage (see Figure 3.4). The previous analysis observed that the determinants could be divided into six main categories that could influence organisational competitive advantage. These categories, shown in Figure 3.4, are 1) technical skills; 2) management ability; 3) strategic capital; 4) operational factors; 5) social influence; 6) resources/financing ability. The arrows indicate how the determinants directly affect organisational competitive advantage, as retrieved from the selected 95 articles.

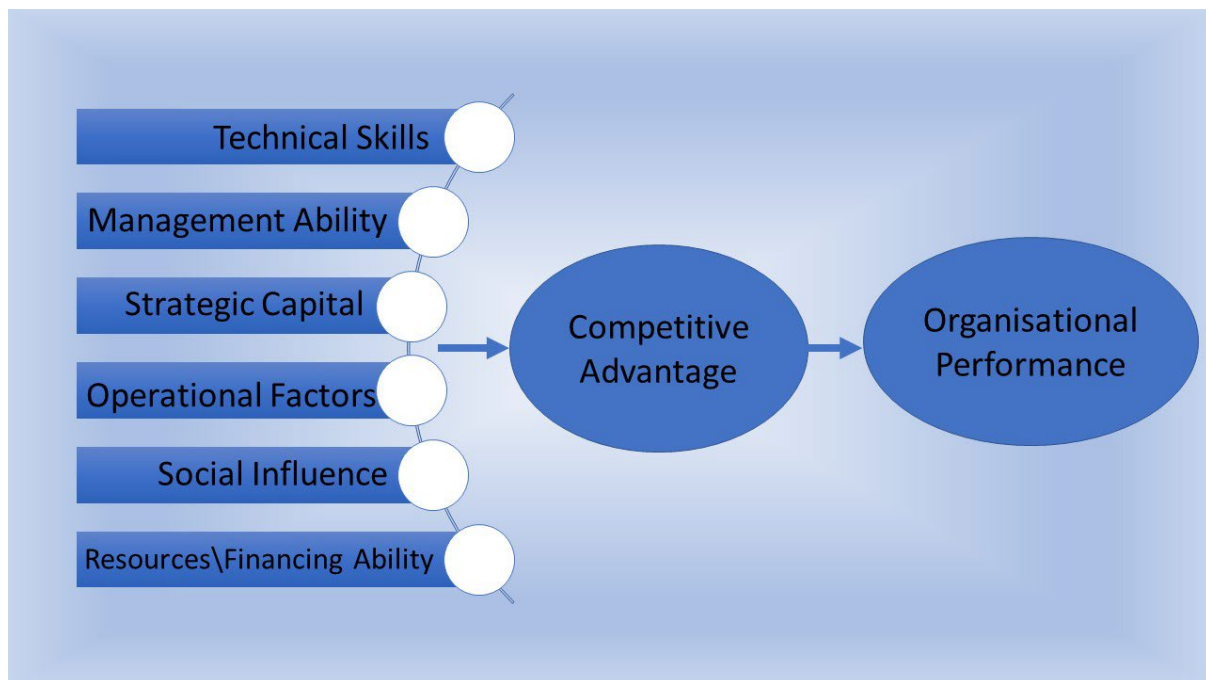


Figure 3.4: Conceptual framework of performance determinants

3.6.1 *Technical Skills*

This category includes five dependency and interactive determinants. Construction equipment selection, information system quality and lean construction result from technical strength; in contrast, information technology and innovation drive technical skills.

Despite extensive research over recent decades into the use of IT in construction, few investigators have concerned themselves with the impact of IT on competitive advantage. There has, however, been a call by researchers in the construction field for better tools to assess the effects of IT on performance and strategic competitiveness in firms. Literature has found a positive and direct association between IT and competitive advantage (EI-Mashaleh, O'Brien & Minchin, 2006; Sun, Ding & Gu, 2008). It has been attributed to IT enhancing the organisational image and having a positive impact on the degree of project management and work efficiency (Sun *et al.*, 2008).

One extensive literature review revealed the vital role of practical innovation in providing organisations with a competitive advantage (Crossan & Apaydin, 2010; Martínez-Román, Tamayo & Gamero, 2017). In other words, innovation has a positive relationship with a competitive advantage. It is also clear that if construction firms wish to attain a sustainable competitive advantage, they need to pinpoint innovations that add value to their reputation. Reducing construction time and costs will generate a benefit of this nature (Lim, Schultmann & Ofori, 2010).

Construction equipment helps an organisation to achieve its goals and to hit project targets, and it also enhances operational efficiency. A project may require machinery and equipment that is simple or extensive, according to the complexity of the project. Therefore, carefully selecting the equipment for a construction project is key to maximising the chance that the overall project is completed within budget, on schedule, and to the desired quality. Therefore, selecting the right construction equipment is vital for improving organisational competitive advantage (Samee & Pongpeng, 2012; Nugraha & Putanto, 2019).

Information system quality (ISQ) refers to the extent to which information, data and knowledge are utilised and to the understanding the operator has about how to apply and design system

quality (Kim *et al.*, 2011). Performance of both the user and the organisation can be aided by ISQ when it is used to establish IT-based resources that are unable to be reproduced by rival firms. Such IT resources will create points of difference from competitors and generate core competencies and competitive advantage to improve organisational performance (Gorla, Somers & Wong, 2010). It explains why a significantly positive relationship has been found between ISQ and competitive advantage (Kuo, 2013).

The value of lean construction during the building process lies in ensuring that a project is completed swiftly and that costs are minimised (Forbes & Ahmed, 2010). It is also designed to minimise waste and maximize value as a project is designed, planned, activated and maintained. There is evidence internationally that productivity in the construction industry is greater when lean construction is employed (Burtonshaw-Gunn, 2017). Therefore, Lean techniques in construction positively impact organisational competitive advantage (Shurrab & Hussain, 2018).

Advanced technical skills, once they are attained, can dependably provide a competitive advantage (Zhang, Deng, Zhao & Chang, 2019). Figure 3.5 summarises the relationship between technical skills and competitive advantage, as retrieved from the literature.



Figure 3.5: Conceptual framework of technical skills and competitive advantage

3.6.2 Management Ability

Excellent management ability can facilitate contracts being fulfilled within budget and in a timely manner (Deng, Pheng & Zhao, 2014). It can avoid disputes about responsibilities and

breakdowns of trust (Davies, Dodgson, Gann & MacAulay, 2017). Managerial determinants include competitive strategies, human resources management, total quality management and strategic management. Competitive strategies give organisations an edge over their competitors and include organised and linked decisions made in a sequence (Schuler & Jackson, 1987). There is good evidence to suggest that such strategies relate positively to competitive advantage (Porter, 1980; Miller & Cardinal, 1994; Kale & Arditi, 2003; Tan *et al.*, 2012, Oyewobi *et al.*, 2016; 2017). The business environment has a positive influence on the competitive strategies used by an organisation. Moreover, it moderates the relationship between competitive strategy and competitive advantage (Prescott, 1986; Ward, Bickford & Leong, 1996; Pelham, 1999; Baum & Wally, 2003; Kabadayi *et al.*, 2007; Nandakumar, Ghobadian & O'Regan, 2010).

Turning to strategic management, several researchers have argued that it has a direct positive effect on organisational competitive advantage (Maes, Sels & Roodhooft, 2005; Dikmen *et al.*, 2009; Isik *et al.*, 2010), while others have found that that it provides no significant difference in competitive advantage except among small-size companies (Anikeeff & Sriram, 2008).

Another tool available to companies is total quality management (TQM). This organisational option delegates the authority of business owners to people who have the relevant information with which to make decisions (García-Bernal & García-Casarejos, 2016; García-Bernal and Ramírez-Alesón, 2010; Wruck & Jensen, 1994). It helps companies to manage coordination issues efficiently. Several studies report a direct positive relationship between adopting TQM and improving businesses' competitive advantage in different ways, such as reducing overall cost, reducing production time, and improving productivity (Corredor & Goñi, 2011; Duh, Husa & Huang, 2012; Sila & Ebrahimpour, 2005; Mann, Adebajo, Laosirihongthong & Punnakitkashem, 2011; Prajogo & McDermott, 2005; Panuwatwanich & Nguyen, 2017; Lee, Moon & Lee, 2011). Although the literature has shown a positive relationship, a few other

studies have indicated that there may be a negative or insignificant relationship between TQM and competitive advantage (Nair 2006; Corredor & Goñi , 2011).

There is clearly heterogeneity in the performance of organisations, and the organisational characteristics that are key to explaining this variability are linked with competitive strategies and the business environment. The present study categorises organisational characteristics according to Lansley (1987): organisational structure, problem-solving style (decision-making style) and management style. Researchers have demonstrated empirically the positive, direct impact that organisational characteristics have on competitive advantage (Pertusa-Ortega, Molina-Azorín & Claver-Cortés, 2008; Oyewobi *et al.*, 2017). Organisations that engage in a decision-making style tend to be better at innovating and to add value to their business by creating unique products (Amzat & Idris, 2012).

Business models, which are part of coordinating the procurement process with corporate management, play significant roles in determining the performance of construction organisations and contribute to the creation of competitive advantage (Jang, Ahn, Park, Lee & Kwon, 2019; Veronika, Riantini & Firmansyah, 2008; Othman, Abd Rahman, Sundram & Bhatti, 2015). Different business model variables have a disparate impact on businesses' competitive advantage. For example, international diversification was negatively significant in the growth of competitiveness, while regional diversification had a positive influence on profitability and growth competitiveness (Jang *et al.*, 2019). Veronika *et al.* (2008) showed that a company's leadership quality and its creation of a resource plan were the most influential factors in corporate management in terms of improving the competitive advantages of a construction organisation. This result is supported by Benson, Saraph and Schroeder. (1991) and Madu, Kuei and Jacob (1996), who also found that the more capably a company's management could plan, instruct, lead, communicate and manage information to determine the

required resources, the more significantly its performance improved. Procurement process coordination is a key supply chain process that is considered to influence corporate performance most obviously (Lambert, Cooper & Pagh, 1998).

The creation of a firm's success depends on steady management ability. Skill in this field, once attained, allows process management to become complete, perfect, or ready (Tarhan, Turetken & Reijers, 2016). Figure 3.6 summarises the relationships between management ability and competitive advantage, as retrieved from the literature.



Figure 3.6: Conceptual framework of management ability and competitive advantage

3.6.3 Strategic Capital

For construction organisations, an important source of competitive advantage can be organisationally embedded capital. This can be valuable and unique, and include capital structure and sources, customers relationship management, intercompany cooperation, knowledge retention and management, engineering education, organisational learning, human capital and marketing resources.

Capital structure is the financial decision concerning the proportion of debt and equity (Modigliani & Miller, 1958). It is found to behave variably in relation to performance measurement technique. For example, the work of Mohammad, Bujang and Abd Hakim, (2019) used return on equity (ROE) as a measure of the relationship between capital structure

and financial performance and found a positive association. This implies a link between leverage and the creation of value for shareholders, suggesting that extra leverage would maximise shareholder wealth. In contrast, a negative association was found when the performance was measured by return on asset (ROA) (Mohammad *et al.*, 2019). A construction company's performance is determined in part by how strong its relationships are with the other parties involved. Such parties tend to include private or public clients, subcontractors, material dealers, financial institutions, regulatory bodies, labour unions, and surety companies. The strength of these relationships directly and positively correlates with competitive advantage (Hausman, 2001; Pinto & Mantel, 1990; Kumaraswamy, 1999; Dainty *et al.*, 2003).

Organisations need to innovate and to achieve competitive advantage, and an avenue through which they can achieve this is effective knowledge management. Business performance and competitive advantage depend on knowledge management being efficient (Davenport & Prusak, 1998; Brush & Vanderwerf, 1992; Nonaka & Takeuchi, 1995). Most of the research into this topic reports that when organisations implement knowledge management, it supports them to perform better (Gold, Malhotra & Segars, 2001; Choi, Poon & Davis, 2008). In the same context, engineering education significantly and positively influences organisational competitive advantage, which will lead to superior organisational performance (Kerdpitak & Jermisittiparsert, 2020). Such education provides engineers with technical and innovative skills to use in their organisations and contributes to products and services that are developed and offered by their organisation. Engineering education also provides managerial skills that can be used in organisations to improve and speed up specific processes involved in their operations, according to economic development theory (Psomas & Jaca, 2016).

Construction researchers have long advocated that organisational learning and human capital are positively linked to organisational performance and that they lead to competitive advantage

(Jashapara 2003; Chan, Cooper & Tzortzopoulos, 2005; Wong, Demertjis, Hardie & Lo, 2015; Zhai, Liu & Fellows, 2014; Wong & Lam, 2012; Salim & Yadav, 2012; Nguyen, 2020). However, a lack of agreement on the role that marketing resources play in organisational performance creates debate among researchers (Othman *et al.*, 2015). Some studies have found that entrepreneurial orientation is a primary influence upon how successfully an organisation competes and performs (Covin and Slevin, 1991; Zahra, Ireland & Hitt, 2000). However, Covin and Slevin (1991) questioned this link, noting insufficient empirical evidence for a relationship between entrepreneurial orientation and competitive advantage.

Strategic capital provides a sound basis for the development of a company and competitive bidding; it is the root competitive advantage. Figure 3.7 summarises the relationships between strategic capital-related determinants and competitive advantage, as retrieved from the literature.



Figure 3.7: Conceptual framework of strategic capital and competitive advantage

3.6.4 Operational Performance Factors

Operational performance is vital at the pre-qualification stage, which means that it is a source of advantage that organisations need in order to enter the construction market. The present study indicates that safety culture, organisational culture, strategy implementation process and business environment fall under this category. These factors help to keep a company more stable internally and externally, thereby easing its entrance to the market. Safety culture first

appeared after the Chernobyl disaster, with Cullen (1990) describing a company's atmosphere where safety is understood and accepted. Work safety must be part of a company's culture in high-risk industries such as construction. Since the concept first appeared, many researchers have discussed safety culture in terms of competitive advantage and organisational performance. The literature indicates that a culture of safety positively and directly affects an organisation's competitive advantage (Chen, 2004; Randhawa & Kaur, 2014; Widyanty, Daito, Riyanto & Nusraningrum, 2020). It is therefore clear that companies that have a clear policy regarding employee safety and a high commitment from leadership and management towards that policy will improve their competitive advantage (Fernández-Muñiz, Montes-Peón & Vázquez-Ordás, 2009).

The importance of an organisation's culture is illustrated by this direct significant effect of safety culture. Some studies have argued that research into the way culture impacts performance should concentrate on the subculture system (Li & Jones, 2010), while others have looked at it in terms of a unitary corporate culture (Jashapara, 2003). In fact, an extensive literature review shows that both approaches have revealed that the culture of an organisation significantly and positively affects its competitive advantage and performance (Virgiyanti, Tufail & Bakar, 2019; Jashapara, 2003; Li & Jones, 2010).

In order for companies to remain locally and internationally competitive, a vital aspect of business strategy is strategy implementation (Jiang & Carpenter, 2013). A formulated strategy can only benefit a company if it is successfully implemented (Raps, 2005). To perform a strategy successfully, several processes need to be considered (Stewart, Mohamed & Daet, 2002). The literature shows that strategy implementation impacts organisational performance, and when successfully implemented, it positively influences a company's competitive advantage (Kohtamäki, Kraus, Mäkelä & Rönkkö, 2012). It is essential to provide employees

with sufficient training if strategies are to be implemented, and this will have a direct influence on profit growth.

The business environment is consistently pinpointed as being a key factor influencing organisational performance and driving sustainable competitive advantage (Lenz, 1981; Oyewobi *et al.*, 2017). The business environment for construction organisations around the world is turbulent and characterised by a rapid pace of change. Any failure of an organisation to respond to this state of flux could hinder its survival (Enhassi, Mohamed & Abushaban, 2009). The business environment positively affects competitive advantage (Oyewobi *et al.*, 2016; Audia, Locke & Smith, 2000) and moderates organisational characteristics and competitive strategies (Oyewobi *et al.*, 2016; 2017). Therefore, different strategies suit different environmental conditions. For example, in a stable environment, a cost-leadership strategy would be ideal, suggest Keat and Hitts (1988), but in an uncertain or dynamic environment this strategy may lead to poorer performance.

The foundation of competitive advantage is excellent operational performance (Bolton & Scharfstein, 1990). Figure 3.8 summarises the relationships between operational performance factors and competitive advantage, as retrieved from the literature.



Figure3.8: Conceptual framework of operational performance factors and competitive advantage

3.6.5 Social Influence

The construction industry has a worldwide reputation as being worker-unfriendly, largely due to time constraints, excessive workloads, deadlines and the associated stress (Leung, Skitmore

& Chan, 2007; Lingard, Francis & Turner, 2012). The preference of employees for work-life balance was examined in a large New Zealand construction company by Morrison and Thurnell (2012). The outcome indicates that long work hours and weekend work created work-life conflict. Work-life balance (WLB) can be defined as individuals' ability to maintain an equilibrium between their work and non-work responsibilities, without stresses from one weakening the satisfactory experience of the other (Noon, Blyton & Morrell, 2013). The literature reveals that there is a positive relationship between WLB and competitive advantage (Oyewobi *et al.*, 2019; Kim, 2014; Parkes & Langford, 2008; Harrington & Ladge, 2009).

Organisational commitment by employees has been catalogued into three main elements: the way an employee identifies with the objectives and values of their organisation; the effort they put into being involved in their organisation; and how loyal they are to their organisation (Al-Meer, 1989). There is good evidence that such commitment relates to competitive advantage. Path analytic results, for example, show a positive and significant relationship between organisational commitment and competitive advantage (Oyewobi *et al.*, 2019). A similar connection was demonstrated by Chen and Francesco (2003) and Swailes (2004). They stated that employees' increased level of affective commitment to their organisation frequently led to improved or high organisational performance.

Sustainable practices (SPs) have been described as a group of practice attributes that are driven by a sustainable value and executed by one or more agents in a specific context (Hart, 1996). Criticism has long been directed at the construction industry for being environmentally unfriendly (Pham & Kim, 2019), but there are three dimensions of sustainability that construction phase practices can impact, either positively or negatively: environment, economy, and society. To promote positive effects and mitigate negative effects in this phase, there is a requirement for firms to adopt SPs (CII, 2009). Implementing sustainable practices

is documented as being a contributor to competitive advantage (Seow, Hillary, Robinson, Anumba, Carrillo & Al-Ghassani, 2006; Yusof, Abidin, Zailani, Govindan & Iranmanesh, 2016; Shi *et al.*, 2016). Specific reasons for that include higher standards of labour practice as a result of safer and cleaner construction sites, lower costs resulting from less waste, better market access, an improved image that achieves revenue gains, loyalty and repeat business, and enhanced human development. More investment in SPs by stakeholders could be facilitated if governments would better recognise the significant benefits that SPs provide by improving sustainability awareness and knowledge (Durdyev, Ismail, Ihtiyar, Bakar & Darko, 2018).

All corners of society are growing increasingly concerned about climate change, and the calls for sustainable business practices grow ever louder. In response, this is redefining and broadening the role of a corporation in the wider environment. The revisited role includes a more substantial commitment to issues of sustainability. This demands that companies peer beyond corporate financial performance (CFP) and start to emphasise corporate social performance (CSP) and responsibility (CSR). The concept of CSR emerged from concerns about environmental risk, global warming and what a sustainable future might comprise. At times it might require companies to invest part of their profits back into society — but does such a course of action pay off?

This is part of a question that has been asked many times over recent decades by academic and industrial researchers about the benefit that an organisation receives from being socially responsible. The literature on this subject is extensive but indicates that CSR activities tend to increase revenue and improve company performance (Nanda, 2018; McWilliams & Siegel, 2000; 2001; McWilliams, Siegel & Wright, 2006). In order to highlight their social value and communicate their activities to the public, it is increasingly common for companies to publish annual CSR reports (Zhang *et al.*, 2019).

This approach seems to be effective: research shows that prospective clients do differentiate companies based on their social reputation (Cheng, Ioannou & Serafeim, 2014). A robust reputation in this sphere can therefore positively influence the development of a company. It could, for example, help recruit higher-quality personnel, create unforeseen prospects, and reduce capital constraints. Figure 3.9 summarises the relationships between technical skills and competitive advantage, as retrieved from the literature.



Figure 3.9: Conceptual framework of social influence factors and competitive advantage

3.6.6 Resources and Financial Ability

If an organisation is to sustain its competitive advantage, it must develop a unique set of resources and use a well-conceived strategy to deploy them (Collis & Montgomery, 2008). Otherwise, when intense competition begins to have its predictable effects on organisations, propose Li and Ling (2012), attention tends to be diverted from the external environment, and the organisation falls back on its internal capability to take advantage of unique resources effectively. A well-conceived strategy, properly implemented, will not fall by the wayside in these circumstances. It's also been contended that critical skills that are distinctive to the organisation are needed to support an effective strategy (Prahalad & Hamel, 2002). The same authors also recommend that to achieve sustainable competitive advantage, capabilities (core competencies) must be effectively deployed. There is considerable literature regarding how resources and capabilities relate to competitive advantage in the construction industry, and the general conclusion is that they relate positively with organisational performance and offer

competitive advantages (Prahalad & Hamel, 2002; Barney, 2014; Teece, 2007; Tan *et al.*, 2012; Oyewobi *et al.*, 2016; Tripathi & Jha, 2018; Isik *et al.*, 2010; Kang, Cheah & Chew, 2005).

Internationalisation and diversification are vital issues that are often considered by construction organisations when designing their strategic plans (Horta, Kapelko, Oude Lansink & Camanho, 2016). The way competitive advantage relates to diversification and internationalisation has been extensively explored in the literature. Some studies showed that non-diversified companies perform better than do highly diversified companies, suggesting that specialisation would be a correct choice for maximising profitability (Siddharthan & Lall, 1982; Berger & Ofek, 1995; Kim & Reinschmidt, 2012; Ofori & Chan, 2000; Tallman & Li, 1996; Geringer, Tallman & Olsen, 2000; Denis, Denis & Yost, 2002). Other studies have found that there is no difference in the competitive advantage gained between diversified and non-diversified organisations (Choi & Russell, 2005; Ibrahim & Kaka, 2007). Diversification and internationalisation tend to promote different behaviour when there are few factors (e.g., the size of the company, its market environment, the company's core business, and the degree of internationalisation) in the relationship with a competitive advantage. For example, an analysis of 81 service-oriented German companies showed that when the degree of internationalisation was less than 18%, there was a negative relationship with competitive advantage. In contrast, there was a positive correlation when it was 18% (Capar & Kotabe, 2003). This effect could be due to the fact that the first stage of internationalisation for construction firms tends to be influenced by complex challenges such as social responsibility (Ma *et al.*, 2016) and environmental management (Chen *et al.*, 2016b).

Financial leverage is a term that refers to the way firms use their debt. Using debt offers the benefits of tax shields; these reduce taxable income and thereby lower a firm's total income tax obligations. This financial benefit enhances performance. Thus, the use of financial

leverage theoretically has a positive effect on corporate performance and competitive advantage, and evidence for this being the case has been reported by Burja (2011), Seelanatha (2011), Nirajini and Priya (2013), Sivathaasan *et al.* (2013) and Ghayas and Akhter (2018).

Another financial consideration is supply chain finance, which is often measured through the cash conversion cycle (Zhang *et al.*, 2019). This cycle covers the time period from when cash is outlaid to when it is recovered (Bui, 2020). If this time period can be shortened, the financial connection between participants becomes strengthened (Wuttke *et al.*, 2013), which has a positive influence on supply chain finance. Moreover, such shortening means that participants are able to minimise the cost of short-term credit, and this enhances the performance of a firm (Bui, 2020). Corporate financial flows can therefore be optimised by supply chain finance (Pfohl & Gomm, 2009). This will stabilise the whole supply chain (Klapper, 2006) and, importantly, achieve competitive advantage (Lekkakos & Serrano, 2016). There is thus a positive correlation between effective supply chain finance and competitive advantage. For performance improvement, therefore, construction industry management must optimise supply chain finance and use financial leverage efficiently.

If a bidder is to access sufficient financial capital for a project, it needs strong financing ability (Wang *et al.*, 2016). This can be more accessible for construction companies with an international reach that allows them to obtain financial resources from overseas banks (Kraus *et al.*, 2017). Figure 3.10 shows the relationships between resources and factors related to financial ability, and competitive advantage, as retrieved from the literature.



Figure 3.10: Conceptual framework of resources and financing ability and competitive advantage

3.7 Conclusion

A boom in the construction industry brings with it both opportunities and challenges for construction organisations. When the environment is tense and competitive, any advantage over competitors can assist organisations in achieving success. This study proposed a framework of the determinants of organisational performance in construction. A careful exploration was undertaken to summarise studies conducted on the main organisational performance determinants in the construction industry. It involved developing and implementing a systematic procedure to investigate a broad range of literature in order to provide a thorough understanding of the question of performance differentials in the construction industry. Accordingly, 32 determinants were identified and categorised into six main groups: technical skills, management ability, strategic capital, operational performance factors, social influence, and resources and financing ability. The reported relationships helped to establish a conceptual framework for indicating organisational performance by mapping the interaction between the determinants. Decision-makers and managers can leverage the results of this study to enhance their management competencies so that they can improve performance at the organisational level.

Some limitations may have influenced the findings of this study. Firstly, the large and increasing number of publications in the field of construction organisation performance, along with the different taxonomies that researchers employ, mean that some papers that have reported performance determinants could possibly have been omitted. Secondly, the way performance determinants were defined and categorised may have been affected by the researchers' bias. To minimise the chance of this and to ensure the accuracy of the findings, one of the authors validated the content analysis by cross-checking the identified determinants with the selected literature. Third, the viewpoints of all industry practitioners may not be reflected in this study's findings. It is unlikely that all experiences of the determinants have

been published in the academic literature. Research in future on this topic may combine an SLR with in-person interviews or questionnaires, and also employ triangulation methods.

The present SLR has advanced the academic understanding of how to robustly conduct systematic literature reviews, and it provides a benchmark against which to compare previous and future reviews, as well as offering potential areas of focus.

The developed framework feeds into further empirical studies that will provide a roadmap to help decision-makers improve overall organisational performance. It could be used, for example, to ascertain performance differentials at project and stakeholder levels, and in a range of business hierarchies (small, medium and large-scale construction firms).

3.8 Epilogue

This chapter was a result of an extensive SLR on the determinants of organisational performance. It critically analysed the determinants of organisational performance and resulted in 32 main determinants. This chapter designed to address the study first objective as stated in Chapter 1. The following chapter will rank the retrieved determinants based on the New Zealand construction professionals.

Chapter 4 A RANK ORDER OF DETERMINANTS OF CONSTRUCTION ORGANISATIONS' PERFORMANCE IN NEW ZEALAND

This chapter is extracted from:

- Alqudah, H. E., Poshdar, M., Tookey, J. and Rotimi, J. O. B. (2020). A rank order of determinants of construction organisations' performance in New Zealand. *International Journal of Construction Supply Chain Management Special Issue Vol. 10, No 2.* (pp. 194-211) DOI 10.14424/ijscsm100220-194-211.

4.1 Prologue

There are certain factors within and outside organisations that can influence organisational performance. The presence or absence of those factors impacts the ability of organisations to gain a competitive advantage over their rivals. As a risk-prone business sector, construction organisations need to be able to identify those determinants that could ensure their superior performance. To date, global studies have identified many determinants that govern the performance of construction organisations. However, little of these are known in New Zealand. This chapter aims to provide insights into the determinants of organisational performance in the New Zealand construction industry. What are the determinants that affect construction organisational performance in New Zealand? What is the weight of each determinant? Were answered in this chapter (Objective 2). Therefore, this chapter measures the significance of identified determinants of construction organisational performance. A total of 97 professionals participated in a questionnaire survey administered using a random sampling technique. Relative Importance Index approach was used to rank the determinants according to their importance to organisational performance. Five main determinants were found significant and ranked highly, with more than 80% relative importance index scores. These determinants are resources and capabilities, competitive strategies, organisational characteristics, business

environment, and customer relationship management. This finding provides a useful benchmark for future research on the significance of some determinants that could explain the performance differentials experienced in the construction domain in New Zealand.

4.2 Introduction

In recent years, several researchers have attempted to identify the reasons for the New Zealand construction industry's performance differential. The construction industry has crucial importance to the economy of the country. In New Zealand, the construction sector plays a significant role in driving the economy's growth with a substantial contribution to businesses, employment, and GDP (PwC, 2016). The construction industry contributes to many other industries, such as service-related sectors and the manufacturing sector. New Zealand acknowledges the construction industry as an essential national asset that needs to be advanced and developed to meet the current challenges this environment creates locally and globally (MBIE, 2017). The New Zealand construction and construction-related services led the driving the economy's growth with 10 per cent of national employment in 2020 (MBIE, 2021). With a 4.351 billion NZD contribution to New Zealand's GDP, the construction industry took third place (after the service and manufacturing industries) as the most valuable good-producing industry for the first quarter of 2021 (Stats NZ, 2021). Construction industry integrates directly and indirectly with other sectors creating a more significant effect on the economy. (Stats NZ, 2021).

Growth in the New Zealand construction sector has varied drivers, whereas population growth has propagated residential sector activities in the North Island. In the South Island, post-earthquake rebuilds have been responsible for most construction sector work. The value of building consents issued across residential, non-residential, and infrastructure sectors have increased for the most part year-on-year, with employment in these respective sectors following

a similar trend. The leading regions in terms of the value of construction work in New Zealand are Auckland, Canterbury, Waikato, Bay of Plenty, and Wellington.

Despite the seemingly endless construction boom in New Zealand, it has been found that construction organisations are unable to meet the market demand, and the industry is stuck at a peak point. It cannot perform any better (ANZ, 2017). Statistics show that construction organisations' survival rate in all construction industry sectors started in 2015 does not exceed 44% after five years. Surprisingly enough, only 85% of the organisations have survived after the first year (Stats NZ, 2021). Table 4.1 shows the survival rate for residential and non-residential enterprises that started between 2015 and 2018.

Table 4.1: Survival rate (%) for SMEs that started in 2015-18 (Stats NZ, 2021)

Residential building construction					
Businesses birth	After 1 Year	After Years	2 After Years	3 After Years	4 After Years
2015	85	69	58	50	44
2016	86	70	59	52	..
2017	84	68	57	..	..
2018	85	71	..	..	..
Non-Residential building construction					
2015	84	68	53	49	42
2016	84	62	54	46	..
2017	85	59	48	..	..
2018	84	67	..	..	..

Historically, construction industry faced unstable environments and battled with increased competition, both in developing and developed countries (Tan *et al.*, 2012). Consequently, "competitive advantage" and its contributing factors continue to receive attention in construction management studies (Tan *et al.*, 2012; Oyewobi *et al.*, 2016). Competitive advantage is an advantage over competitors by offering consumers greater value, either utilising lower prices or providing greater benefits and service that justifies higher prices (Porter,

1985). It attributes an organisation that adds value to its products and services, thus gaining an advantage over its competitors within the same niche (Lynch, 2012). Competitive advantage is a status in which one company can achieve profits more than the industry average. The importance of competitive advantage is shown in its ability to enable sustainable growth and accept globalisation and dynamic competition in the dynamic world (Flanagan *et al.*, 2007). Since the 1960s, several studies have investigated achieving competitive advantage for construction organisations that resulted in forming three leading schools of thoughts (Flanagan *et al.*, 2007): Porter's (1980) competitive advantage and competitive strategy models, which postulated that competitive advantage comes from the competitive strategy a firm adopted to neutralise threats or to exploit opportunities presented by an industry (Betts & Ofori, 1992; Langford & Male, 2008). The resource-based view and the core competence approach discuss that firms should develop unique resources and achieve core competence to sustain growth. (Barney, 1991). Furthermore, the strategic management approach deals with the business environment's turbulence and encourages strategic thinking to achieve long-term development (Venegas & Alarcon, 1997).

Eighteen factors (Table 4.2) were predominant determinants of organisational performance in construction (Alqudah *et al.*, 2018). Despite all the advancements in organisational performance research, there is still a lack of information about each determinant's weight in shaping the overall organisational performance. Therefore, this paper aims to measure the significance of the identified determinants and specifies those with the most significant contributions to construction organisations' performance.

Table 4.2: Organisational performance determinates (Alqudah *et al.*, 2018)

No.	Determinants	Frequency of reporting*
1	Competitive Strategies (CS)	12
2	Organisational Characteristics (OCH)	6
3	Resources and Capabilities (RC)	5
4	Strategic Management (SM)	5

5	Diversification and Internationalisation (DI)	5
6	Total Quality Management (TQM)	4
7	Organisational Learning (OL)	4
8	Environmental Factors (EF)	4
9	Organisational Culture (OCL)	2
10	Knowledge Management (KM)	2
11	Innovation (INN)	2
12	Information Technology (IT)	3
13	Human Resource Management (HRM)	1
14	Procurement Process Coordination (PPC)	1
15	Marketing Resource (MR)	1
16	Factors of Corporate Management (FCM)	1
17	Customer Relationship Management (CRM)	1
18	Construction Equipment Selection Factors (CESF)	1

* Frequency of reporting: the number of times each factor used as main determinant of Organisational performance

4.3 Background of Performance Differentials

Construction is a dynamic and hypercompetitive industry, and for an organisation to maintain its sustainability and gain a competitive advantage, it must improve its performance (Rudd *et al.*, 2008). Many factors contribute to shaping organisational competitive advantage, which also explains the differences in those performances. Understanding these differentials' causes and sources is one of the fundamental motivations in strategic management research (Oyewobi *et al.*, 2016). Historically, a wide diversity exists in research perspectives on the causes\ determinants of performance differentials in the construction domain and the significance of each determinant in the overall organisational performance. For example, Lenz (1981) identified competitive strategies, characteristics of the organisations and business environments. At the same time, other leading researchers such as Barney (2020), Teece (2007), and Sun *et al.* (2008) argued disparities in organisations' resources and capabilities and information technologies (IT) as underlying causes of performance differences.

Construction organisations need to understand the performance differential causes as a part of their survival strategy. Alqudah *et al.* (2018) developed a conceptual framework that presented the interconnection between the performance determinants and the performance of a construction organisation (Figure 4.1). The arrows represent the direct effect of the

determinants on the performance of the organisations. The study themed the determinants into externals and internals (management style, decision-making style, organisational assets).

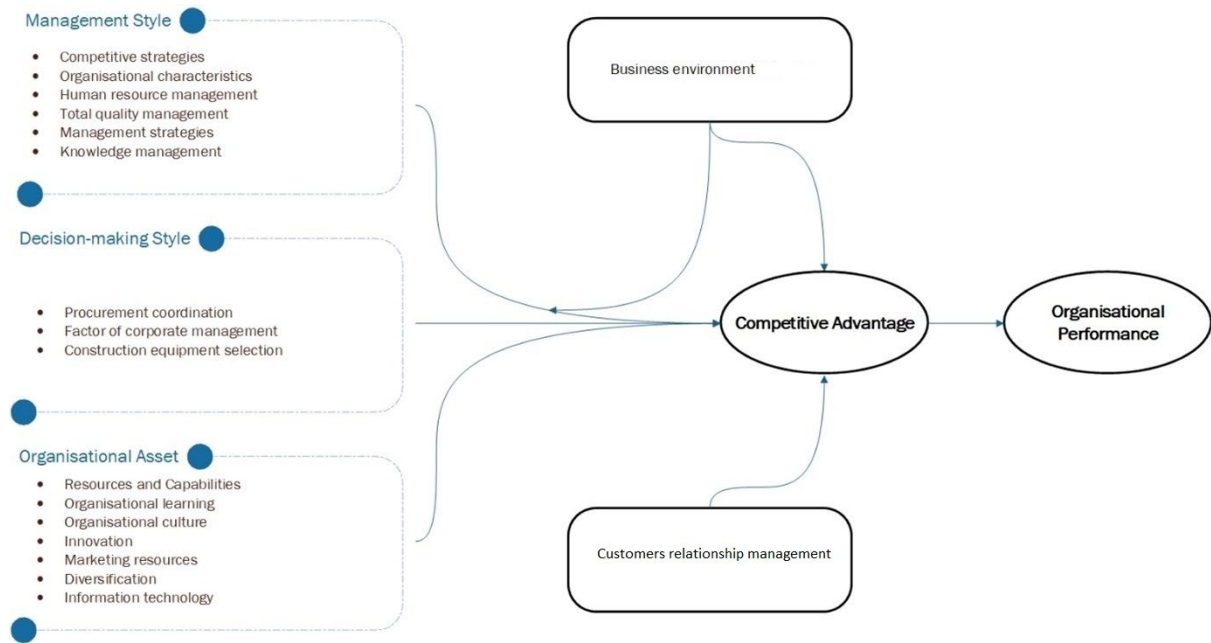


Figure 4.1: Conceptual framework of performance determinants (Alqudah *et al.*, 2018)

4.3.1 External Determinants

As an external determinant, customer relationship management found to be the primary influencer of organisational performance. CRM initiatives aim to create value for the company and the customer and are based on the idea that CRM activities can improve organisation performance (Boulding, Staelin, Ehret, & Johnston, 2005; Osarenkhoe, 2006; Parvatiyar & Sheth, 2001). CRM activities found to have a direct positive relationship with organisational performance (Hausman, 2001; Dainty *et al.*, 2003; Reinartz *et al.*, 2004). Business environment positively affect organisational performance (Oyewobi *et al.*, 2016) and a moderating effect on management style determinants (Oyewobi *et al.*, 2016; 2017).

Internal determinants of organisational performance have been categorised into three main themes: management style, decision-making style, and organisational asset-related determinants.

4.3.2 Management Style

Competitive strategies, organisational characteristics, management strategies, total quality management, knowledge management, and human resources management are main managerial determinants of organisational performance. Competitive advantage has a positive relationship with competitive strategies (Porter, 1980; Miller & Cardinal, 1994; Tan *et al.*, 2012, Oyewobi *et al.*, 2016; 2017), strategic management (Dikmen *et al.*, 2009; Isik *et al.*, 2010), total quality management (Lee *et al.*, 2011; Duh *et al.*, 2012; Panuwatwanich & Nguyen, 2017), knowledge management (Bakar *et al.*, 2016; ElFar *et al.*, 2017), and human resource management (Zhai *et al.*, 2014). The business environment positively influences competitive strategies and moderates its relationship with a competitive advantage (Nandakumar *et al.*, 2010; Oyewobi *et al.*, 2017). While firm size significantly and negatively affects the relationship between competitive advantage and strategic management (Anikeeff & Sriram, 2008). Regarding management style, performance tends to improve when management appreciates and rewards efficiency, excellence, openness, social skill and contribution to a decision. (Oyewobi *et al.*, 2016; 2017). Competitive strategies suggest a sequence of organised and linked decisions that provide organisations with a competitive advantage over the competitors (Schuler & Jackson, 1987). Moreover, strategic management is significantly related to the competitive advantage used to achieve the present objective (Dikmen *et al.*, 2009).

4.3.3 Decision Making Style

Decision-making style is a significant area of interest within the performance differential field, which is acknowledged to impact competitive advantage to achieve superior organisational performance (Amzat & Idris, 2012; Oyewobi *et al.*, 2016). Three determinants have fallen into the decision-making style; construction equipment selection, the factor of corporate management, and procurement process coordination. Competitive advantage positively linked

with construction equipment selection (Samee & Pongpeng, 2012), the factor of corporate management (Madu *et al.*, 1996; Veronika *et al.*, 2008), and procurement process coordination (Lambert *et al.*, 1998; Othman *et al.*, 2015). A company's management's better capability to plan, instruct, lead, communicate, and manage information to determine resources required will improve its performance (Madu *et al.*, 1996).

4.3.4 Organisational Asset

The last theme that deployed in the internal organisational determinants is the organisational asset. Moreover, that categorised into seven categories resources and capabilities, information technology, organisational learning, marketing resources, innovation, diversification, and organisational culture. A considerable amount of literature has been published on the relationship between resources and capabilities and competitive advantage in the construction industry domain. These studies demonstrated that resources and capabilities positively correlate with organisational performance and offer competitive advantages (Barney, 2014; Tan *et al.*, 2012; Oyewobi *et al.*, 2016; Tripathi & Jha, 2018).

Competitive advantage is positively and directly associated with information technology (El-Mashaleh *et al.*, 2006; Sun *et al.*, 2008), organisational learning (Wong *et al.*, 2015; Zhai *et al.*, 2014), marketing resources (Zahra *et al.*, 2000), innovation (Crossan & Apaydin, 2010; Martínez-Román *et al.*, 2017), diversification (Oyewobi *et al.*, 2013; Horta *et al.*, 2016), and organisational culture (Li & Jones, 2010). In contrast, some other studies showed that competitive advantage could negatively affect the diversified (Kim & Reinschmidt, 2012; Ofori & Chan, 2000) and innovated companies (Noktehdan *et al.*, 2015) under specific circumstances. Due to the lack of empirical evidence, a vague and neutral situation have been found between competitive advantage and marketing resources (Covin & Slevin, 1991) and diversification (Choi & Russell, 2005; Ibrahim & Kaka, 2007). Resources and capabilities were

found to positively impact organisational performance in various ways, such as improving internal organisational performance, matching the base of resources with the fluctuating environments, and creating market changes.

4.4 Research Method

The overall research method consists of a total of five steps:

1. Identification of the main performance determinants.
2. Ranking the main determinants.
3. Developing a conceptual framework.
4. Developing an empirical model using Partial Least Square Structural Equation Modelling (PLS-SEM) of the interaction between the main determinants and their effect on organisational performance.
5. Validation of the model.

The first step was performed in a previous study by the authors (Alqudah et al., 2018), the second step is about the present study, and the remaining steps are under developing. The second step is explained in detail in the following section.

4.4.1 Step 2: Ranking the Main Determinants

This study conducted 320 questionnaires and retrieved 97 valid questionnaires from professionals from the New Zealand construction industry. The following sections explain the sampling techniques, questionnaire design and data analysis.

Sampling and Data Collection

The research methodology will explain how the objective of this study can be achieved. Firstly, a questionnaire was developed for data collection. The questionnaires provide a quantitative or

numerical overview of the population's patterns, behaviours, or views by analysing a population sample (Creswell, 2009). The use of quantitative questionnaires in the current research enables the researcher to rank the organisational performance determinants. Valuable information could be obtained by addressing a series of questions about the variables of interest to relevant construction industry participants.

The population consisted of the full range of organisations active within the New Zealand construction industry. The iterative formula used by Ankrah (2007) was adopted in order to identify a suitable number of participants to pick from the sampling frame for the survey:

$$ss = \frac{z^2 p(1 - p)}{c^2}$$

Where: ss (sample size), z (standardised variable, P (percentage picking a choice, expressed as a decimal), and c (confidence interval, expressed as a decimal).

$$ss = 1.96^2 \times 0.5(1-0.5) / 0.12$$

$$ss = 96.04$$

The preliminary sample size from the sample frame for the quantitative questionnaire survey was then 96 construction organisations, is the figure, according to Ankrah (2007) as required to generate a new sample size:

$$New\ ss = \frac{ss}{1 + [(ss - 1) / pop]}$$

Where pop is population.

$$\text{Therefore, New ss} = 96.04 / 1 + [(96.04 - 1) / 65,320]$$

$$\text{New ss} = 95.90, \text{ Adopted value} = 96$$

The sample size for this analysis was calculated to be 96 construction organisations from the estimates above. Ankrah (2007) noted that it is a challenging environment for the construction industry, especially when a questionnaire survey is involved, to obtain a high level of responses. Consequently, Idrus and Newman (2002) found that any questionnaire survey answer in the range of 20% to 30% was adequate for construction industry study. Therefore, the highest limit (30 per cent) for adjusting for the survey sample is taken to take non-response into account.

$$\text{Survey sample size} = \text{New ss} / 0.3 = \underline{320}$$

Therefore, based on this calculation, out of 65,320 construction organisations, 320 construction professionals were randomly selected from the New Zealand construction industry. Invitations and information were sent through emails to the chosen organisations that contained a link to an online questionnaire survey on Qualtrics. Qualtrics is a simple to use web-based survey tool to conduct survey research, evaluations, and other data collection activities (Qualtrics, 2020). At the end of the survey period, 97 responses were received, which equates to a response rate close to 30 per cent. This response rate is considered appropriate in construction management research to generalise the findings (Kale & Arditi, 2003; Tan *et al.*, 2012).

Questionnaire Design

The questionnaire's design philosophy was based on the fact that it had to be simple, clear, and understandable for respondents. At the same time, they should be able to be interpreted well by the researcher. The questionnaire has a definite advantage of requiring a shorter time to be responded to and is more accurate in the outcome. The questionnaire was formulated based on the determinants identified by Alqudah *et al.* (2018). The questionnaire was carried out online. The electronic link was sent to the participants following their business function.

The questionnaire was divided into three main parts. *Part A* includes the respondents' demographics (background), such as their position in the company, duration of working in this position, and the number of years of experience in the New Zealand construction industry. *Part B* includes questions on the determinants that contribute to the organisational performance differentials as retrieved from literature. In part B, eighteen main determinants of organisational performance were identified from an in-depth literature review. The respondents were requested to reflect on their perception of each determinant's importance towards the overall organisational performance. The perception was indicated on the Likert's scale of five ordinal measures from 1 (no effect) to 5 (very high effect) according to the level of contribution. While *part C* has an open-end question about the respondents' opinion of any other determinants, they might think it affects the organisations' performance in the New Zealand construction industry.

Data Analysis

The procedure used in analysing data aimed to establish the relative importance of the various factors contributing to the differentials' causes. There are two steps used in analysing data: calculating the relative importance index (RII) and each factor's ranking based on the relative importance index.

Relative Importance Index (RII)

The Relative Importance Index (RII) was employed to ascertain each factor's contribution to overall performance differentials in the New Zealand construction industry empirically. RII was used for the analysis because it best fits the purpose of this study. According to Johnson and LeBreton (2004), RII aids in finding the contribution a particular variable makes to the prediction of a criterion variable both by itself and in combination with other predictor variables. RII value ranges from 0 to 1 (Gündüz *et al.* 2013). The higher the RII value more

significant is the impact or frequency of occurrence of the variables. This index was computed using the following equation:

$$RII = \frac{\sum w}{AN} = \frac{5n_5 + 4n_4 + 3n_3 + 2n_2 + 1n_1}{5N}$$

Where w is the weighting given to each factor by the respondent, ranging from 1 to 5, for example, n_1 = number of respondents for No effect, n_2 = number of respondents for low effect, n_3 = number of respondents for moderate effect, n_4 = number of respondents for high effect, n_5 = number of respondents for very high effect. A is the highest weight (i.e., 5 in this study), and N is the total number of respondents. The relative importance index ranges from 0 to 1 (Muhwezi & Otim, 2014; Tam & Le, 2006). Table 4.3 illustrates the details of the responses regarding the perceived importance of each determinant.

Table 4.3: Total respondent's results in performance determinants.

ID	Determinant description	Number of respondent's scoring				
		(1)	(2)	(3)	(4)	(5)
1	Competitive Strategies (CS)	1	8	17	24	50
2	Organisational Characteristics (OCH)	1	4	17	41	37
3	Resources and Capabilities (RC)	1	2	8	35	54
4	Strategic Management (SM)	12	12	19	38	19
5	Diversification and Internationalisation (DI)	9	37	41	13	0
6	Total Quality Management (TQM)	3	31	37	19	10
7	Organisational Learning (OL)	5	24	35	30	6
8	Environmental Factors (EF)	0	12	22	15	51
9	Organisational Culture (OCL)	6	24	30	26	14
10	Knowledge Management (KM)	4	22	42	29	3
11	Innovation (INN)	3	16	37	36	8
12	Information Technology (IT)	4	18	34	38	6
13	Human Resource Management (HRM)	5	17	30	36	12
14	Procurement Process Coordination (PPC)	3	29	39	23	6
15	Marketing Resource (MR)	8	30	44	18	0
16	Factors of Corporate Management (FCM)	9	32	33	25	1
17	Customers Relationship Management (CRM)	5	5	15	33	42
18	Construction Equipment Selection Factors (CESF)	9	23	36	27	5

4.5 Research Finding and Discussions

The determinants causing performance differentials in the construction industry in New Zealand were ranked based on its relative importance index (RII) report. Table 4.4 presents the results.

Table 4.4: RII and ranking of performance determinants.

Rank	ID	Determinant description	RII
1	3	Resources and Capabilities (RC)	0.878
2	1	Competitive Strategies (CS)	0.828
3	2	Organisational Characteristics (OCH)	0.818
4	8	Environmental Factors (EF)	0.810
5	17	Customers Relationship Management (CRM)	0.804
6	4	Strategic Management (SM)	0.68
7	13	Human Resource Management (HRM)	0.666
8	11	Innovation (INN)	0.660
9	12	Information Technology (IT)	0.648
10	9	Organisational Culture (OCL)	0.636
11	7	Organisational Learning (OL)	0.616
12	10	Knowledge Management (KM)	0.610
13	6	Total Quality Management (TQM)	0.604
14	14	Procurement Process Coordination (PPC)	0.600
15	18	Construction Equipment Selection Factors (CESF)	0.592
16	16	Factors of Corporate Management (FCM)	0.554
17	15	Marketing Resource (MR)	0.544
18	5	Diversification and Internationalisation (DI)	0.516

The five main determinants that contribute the most in affecting construction organisations' performance is discussed in the next sections. These five determinants were selected based on Akadiri (2011) suggestions. Hence five important levels are transformed from the RII values: high (H) ($0.8 \leq \text{RII} \leq 1$), high-medium (H-M) ($0.6 \leq \text{RII} \leq 0.8$), medium (M) ($0.4 \leq \text{RII} \leq 0.6$), medium-low (M-L) ($0.2 \leq \text{RII} \leq 0.4$) and low (L) ($0 \leq \text{RII} \leq 0.2$). From Table 4.4, it can be observed that a natural cut-off point of 0.804, produces five fundamental determinants.

Resources and Capabilities (RII=0.878)

As the table shows, the respondents ranked "Resources and capabilities" as the most critical cause of performance differentials in the New Zealand construction industry. The findings of this study are supported by the resource-based view (RBV) theory. It suggests that the

organisations' competitive advantage does not depend on the industry structures but stems from the rare, valuable, and non-substitutable resources inside the organisation. The organisation must identify and strengthen those specific resources by effective utilisation to achieve competitive advantage (Flanagan *et al.*, 2007). However, while the findings of this study suggest that resources and capabilities are positive predictors of organisational performance, some researchers have argued that it needs to be aligned with competitive strategies to achieve superior organisational performance (Chew *et al.*, 2008; Newbert, 2008).

Competitive Strategies (RII= 0.828)

Competitive strategies were ranked second in the table, which comes along with Porter's theory. Porter (1980) argues that some competitive business basics must be given adequate attention for an organisation to have a sustained competitive advantage. He argued that the organisation can achieve competitive advantages by adopting a competitive strategy to neutralise threats and exploit opportunities that float on the industry. The current findings regarding the competitive strategies have been validated within the construction industry, that any organisation that pursues anyone or combined generic strategies will perform better than those that do not (Tan *et al.*, 2012; Li & Ling, 2012)

Organizational Characteristics (RII= 0.818)

Organisational characteristics have been linked with competitive strategies and environmental factors since the 1980s as one of the critical factors that explain the performance differentials (Lenz, 1981; Lansley, 1987). The result of this study shows that organisational characteristics come straight after competitive strategies. The New Zealand construction professionals' opinions and judgments have come along with Lansley's explanation. Lansley (1994) argues that the approach used by individual organisations in solving problems influences the performance of those organisations.

Business Environment (RII= 0.810)

This study classifies the business environment into three dimensions: munificence, complexity and dynamism, followed by Dess and Beard (1984). This study's findings aligned with other researchers on the importance of business environment toward organisational performance. Porter (1980) emphasises the influence of competition in explaining heterogeneity in the performance of organisations. Failure of an organisation to address changes in the environment can negatively affect performance (Audia *et al.*, 2000).

Customers Relationship Management (RII= 0.804)

This study also found that Customer Relationship Management is a vital driver of the New Zealand construction industry's performance differentials. Previous researchers like Hausman (2001) have found a strong positive relationship with organisational performance.

4.6 Conclusion

Construction organisations are faced with substantial challenges to remain competitive and ensure their continued existence and growth. Several factors are known to explain the performance differential in construction organisations. This study collated the industry decision-makers' perception in New Zealand about the top 18 determinants identified by the previous studies. A questionnaire survey was administered, with the responses analysed using the Relative Importance Index approach.

Consequently, the study provided a ranking of the importance of the determinants in overall organisational performance. The findings show that five determinants explain performance differentials in construction organisations: resources and capabilities, competitive strategies, organisational characteristics, environmental factors, and customer relationship management.

These findings provide a foundation for future research on the causes of heterogeneity in construction organisations' performance.

There are limitations to the current study finding that may reduce the generalizability of the results. Firstly, the study was cross-sectional because data were collected within a limited time frame. Secondly, the sample size and analysis of the data could not examine the responses' pattern because of restrictions in the sample size and analysis. A larger sample size can increase the confidence level of the results. However, the study has empirical justifications; therefore, the products could enable construction professionals to focus on fewer determinants for optimum organisation outcomes.

These findings are based on the perspectives of practitioners and decision-makers within the New Zealander construction industry. Global perspectives may show some differences.

4.7 Epilogue

This chapter was performed to rank the determinants of organisational performance to the New Zealand construction industry. It adopted RII to rank the respondents' opinions. This chapter designed to address the study second objective as stated in Chapter 1. The following chapter will study the correlation between the calibrated determinants and organisational performance in the New Zealand construction industry.

Chapter 5 COMPETITIVE STRATEGY, ORGANISATIONAL CHARACTERISTICS, RESOURCES AND CAPABILITIES AND THEIR RELATIONSHIPS WITH ORGANISATIONAL PERFORMANCE.

This chapter is extracted from:

- Alqudah, H, E., Poshdar M., Rotimi, J. O. B., Oyewobi, L., & Tookey, J. (2021). Sustaining construction organisations in NZ: A linear regression model approach to analysing determinants of their performance. *Sustainability*

5.1 Prologue

The characteristics, competitive strategies, capabilities, and resources of an organisation contribute to its competitive advantage and superior performance. A model to explain performance differences in the New Zealand context will be developed by examining the relationships between construction organisational performance and these constructs (Objective 3). The information was obtained using a questionnaire survey. A total of 101 organisations participated in the research. For the instrument used to elicit data, the literature was used to identify indicators associated with organisational characteristics, competitive strategy, resources and capabilities, and performance of an organisation. Analyses of descriptive, parametric, and linear regression were conducted to examine the effects of these constructs on organisational performance. Results suggest that organisational characteristics are significantly associated with internal business processes, learning, and growth perspectives of an organisation's performance while competitive strategies, resources, and capabilities are significantly related to financial perspectives. As a result, these findings add to the current discourse regarding organisational performance differentials in the construction industry. The study demonstrates it is critical to take into account the different organisational characteristics

that are implemented within organisations and how they influence organisational performance beyond rational processes.

5.2 Introduction

The construction industry is dynamic and prone to unforeseen circumstances. A fluctuating marketplace makes the industry more competitive, according to Lee *et al.* (2012). This contributes to New Zealand's highly competitive construction industry because of its extensive infrastructure development plans. This resulted in the construction industry becoming more fragmented and having marginal profitability (Oyewobi *et al.*, 2019). A variety of parameters have added to the growth of New Zealand's construction sector, while population growth has fueled growth in the residential sector in the North Island. Post-earthquake reconstruction accounts for the largest part of construction work in the South Island. In the residential, non-residential, and infrastructure sectors, the value of building permits has risen each year, and employment in these sectors has followed suit. There appears to be a construction boom in New Zealand, yet businesses are unable to meet market demand, and demand is at an all-time high. The demand for construction cannot keep up (ANZ, 2017). Statistically, organisations that started in 2015 and survived five years are not even 50%. It is surprising to find that only 85% of the organisations survive after the first year (NZ Stats, 2021).

The dynamic and hypercompetitive construction industry requires organisations to continually strive to enhance their performance to remain competitive (Rudd *et al.*, 2008). Many factors shape organisational performance, which also explains the performance differentials between organisations (Wilden *et al.*, 2013; Oyewobi *et al.*, 2016; Alqudah *et al.*, 2018). A round of literature review shows that organisation performance is significantly affected by three factors: organisational characteristics (Lenz, 1981; Oyewobi *et al.*, 2017) competitive strategy

(Oyewobi *et al.*, 2017; Barney, 2014) and resources and capabilities (Oyewobi *et al.*, 2019; Teece, 2007).

An organisation's structure and management style are critical to configuring organisational resources, gaining competitive advantage, and enhancing the organisation's effectiveness (Pertusa-Ortega *et al.*, 2008). Previous researchers have investigated the compatibility between the top managers of an organisation and their competitive strategy (Guthrie & Datta, 1997; Li & Tan, 2013). They discovered that a match between these two would lead to better organisational performance.

Although strategic management theory suggests a link between various factors and organisational performance, little research has been conducted in the construction industry to formulate these relationships. The lack of literature examining the effect of the relationship between the previously mentioned determinants in construction is astounding given their importance in the work of organisations (Oyewobi *et al.*, 2016; Alqudah *et al.*, 2018; Lenz, 1981; Porter, 1980; Hawawini *et al.*, 2003). In relation to the strategic management of construction research, the present study contributes to the field. This study presents a theoretical framework of the factors contributing to performance heterogeneity through cross-sectional measurements of organisational characteristics, competitive strategy, resources and capabilities, as well as performance on an organisational level. This study aims to assess the correlation between these determinants and organisational performance.

5.3 The Proposed Framework and its Related Hypotheses

The research introduces a theoretical framework as a summary of the literature review and Industrial Organisation theory and Contingency theory, as shown in Figure 5.1. This particular study tests the hypothesis that a company can attain optimal organisational performance and sustainable competitive advantage by properly structuring, efficiently deploying resources within a proper environment, and pursuing an appropriate strategy. The following sections describe three hypotheses made by this research.

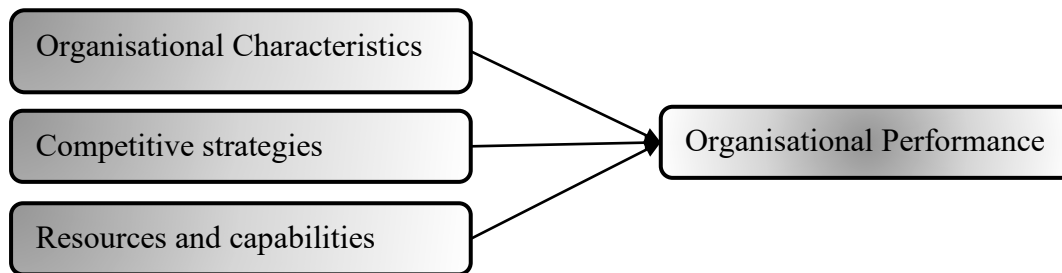


Figure 5.1: Theoretical framework

5.3.1 *Organisational Characteristics and Organisational Performance*

In terms of characteristics of organisation, Magnier-Watanabe and Senoo (2008) view them as qualities derived from the specific style of management associated with a business's structure or even strategies as well as its organisation-specific culture as manifested in its employees' disposition and engagement and relationship with management. In the literature, different characteristics of organisations have been discussed, such as culture, structure, or leadership style, but many of these studies focus on the permanent structures of educational institutions, manufacturing businesses, or marketing research organisations (Goleman, 2017; Giritli & Oraz, 2004). However, just a few research pieces have particularly concentrated on the construction industry (Oyewobi *et al.*, 2017; Giritli & Oraz, 2004; Lansley, 1994; Limsila & Ogunlana, 2008). Building and construction organisations are distinguished by their fragmented nature and project-based approach (Giritli & Oraz, 2004). Construction works are

almost always awarded in competitive tendering systems, which determine the success or failure of the construction works in various competitive business environments (Ho, 2016).

This research explores three main organisational characteristics that are recognised to impact organisational performance (Figure 5.2): *decision-making style*, *management style* and *organisational structure* (Oyewobi *et al.*, 2017; Lansley, 1987; Potosky & Ramakrishna, 2002).

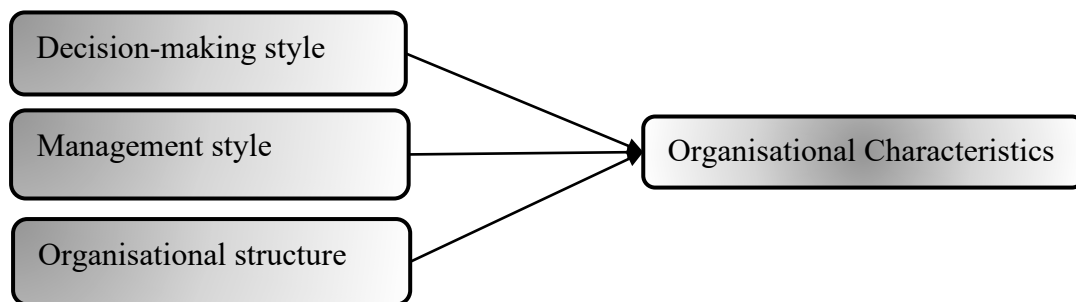


Figure 5.2: Organisational characteristics measures

Literature reports a variety of management and leadership styles adopted by the construction industry. According to Lansley (1994), the success of this specific industry depends on an authoritative and task-oriented management style. There is much uncertainty and contradiction in the business environment, which means that managers must make sound decisions in order to succeed in the turbulent market. Organisational performance is affected by the quality of managers' decisions, and the quality of those decisions is a determinant of organisation performance (Russ *et al.*, 1996). Organisational performance is influenced significantly by decisions made by managers. In their research, Penrose (2009) and Burke and Steensma (1998) find that organisations' performance is significantly related to their managers' effectiveness of decision making. This study, therefore, indicates that these features may boost the competitiveness of construction firms by evaluating their combined effects on strategy and performance. On this basis, the study hypothesises that organisational characteristics influence organisational performance (Wilden *et al.*, 2013; Oyewobi *et al.*, 2017; Pertusa-Ortega *et al.*, 2010):

H1: Organisational characteristics (organisational structure, management style and decision-making style) relate positively to organisational performance

5.3.2 Competitive Strategies and Organisational Performance.

Organisations develop a competitive strategy to achieve and attain their long-term objectives. They use any tool that helps them evaluate and track the progress made in achieving those objectives and make the required adjustments to keep them in line with the plan. Beard and Dess (1981) claim that competitive strategies are essential for analysing profit margins and performance heterogeneities in organisations. A competitive strategy's impact on the performance of construction organisations has gained attention (Kale & Ardit, 2002; 2003; Tan *et al.*, 2012). According to Li and Ling (2012), architecture, engineering, and construction companies in China employ fundamental strategies for a company to be profitable rather than focusing on low-cost approaches. The researchers found that companies employ strategies that distinguish them from their competition.

In this section, the study analyses strategy mainly through Porter's pioneering work strategy typologies (Figure 5.3). These strategies and their impact on organisational success are briefly analysed in this research.

In order to achieve superior profitability, *cost-leadership strategies* are actions taken to create distinctive features for products or services that are low-cost and favourable over those of competitors. There is little evidence that cost-leadership strategy is associated with performance (Oyewobi *et al.*, 2017; Allen & Helms, 2006; Powers & Hahn, 2004). According to Dess and Davis (1984), the low-cost segment of the overall economy has the greatest average return on assets. A low-cost construction strategy can be adopted by organisations by utilising mass production, economies of scale, technical innovation, capital utilisation at maximum levels, and access to raw materials.

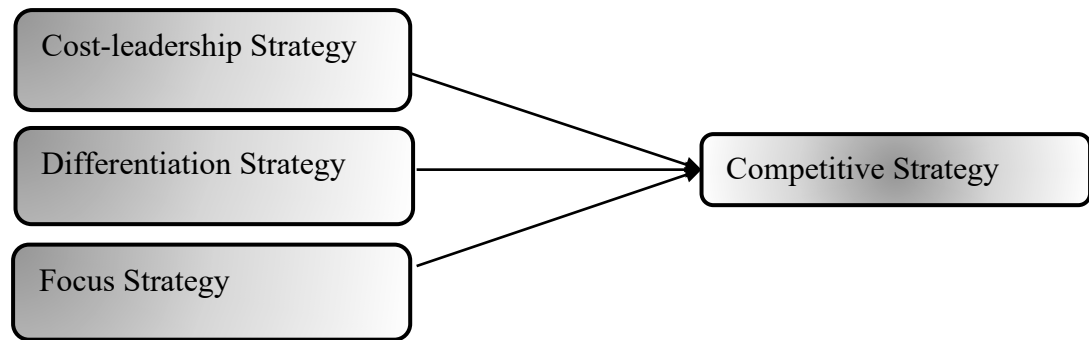


Figure 5.3: Competitive strategy measures

Several other studies have shown that *differentiation strategies* are more effective as strategies for gaining sustained competitive advantage when compared to the popular cost-leadership strategies (Baines & Langfield-Smith, 2003; Kotha & Orne, 1989; Kotha & Vadlamani, 1995; Miller, 1988). Differentiation consists of creating a distinct brand or image or adding value to products and services and competing with rivals based on differentiation. Organisations that implement differentiation strategies do better than their rivals, according to Teeratansirikool *et al.* (2013).

Furthermore, a *focus strategy* can be implemented by adapting a targeted cost-leadership strategy or a targeted differentiation strategy to a particular market segment. A cost-focused strategy, by definition, involves partnering in development activities, placing regional or provincial specialisations, reducing core competencies, and providing value-added skills (Price *et al.*, 2003).

Competitive strategies do not appear to influence organisational performance conclusively. In fact, cost leadership and differentiation strategies positively affect performance in the contemporary world, according to Banker, Mashruwala, and Tripathy (2014). The study by Banker *et al.* (2014) concluded, however, that a differentiation strategy is more likely to help an organisation to maintain its ongoing performance compared to a cost leadership strategy. However, Hill (1988), Murray (1988), Acquaah and Yassai-Ardekani (2008), and Claver-

Cortes *et al.* (2012) believe that strategies that are hybrid contribute to higher performance than conventional strategies. Consequently, the study reports that:

H2: Competitive strategies (differentiation, cost leadership and focus strategies) are significantly related to organisational performance.

5.3.3 Organisational Resources/Capabilities and Organisational Performance.

A well-conceived strategic plan and a unique set of resources are associated with superior organisational performance (Collis & Montgomery, 2008). According to Li and Ling (2012), one of the only sources of superior performance will depend on an organisation's internal capability to take advantage of specific resources efficiently, rather than on the external environment when the competitive environment becomes intense. In order to achieve superior performance, Hamel and Prahalad (1990) argue that effective strategies should be in line with distinctive organisational skills and capabilities (core competence). Barney (1991) offers a different way of conceptualising structure-conduct-performance (SCP) by viewing it as a system that consists of both specific resources and capabilities. The resources that Barney (1991) describes are organisational capital resources related to organisational characteristics. In terms of organisational capital resources, they include the documenting of the organisation's information, the setting of formal and informal goals, the control and coordination of activities, as well as how people are managed within and between organisations, including the environment in which they operate. Chew *et al.* (2008) divide organisation resources into physical, financial, human, organisational, and technological resources, while organisation capabilities should be understood primarily in terms of management or organisational processes leveraged to allocate resources to facilitate productive operation (Teece *et al.*, 1997).

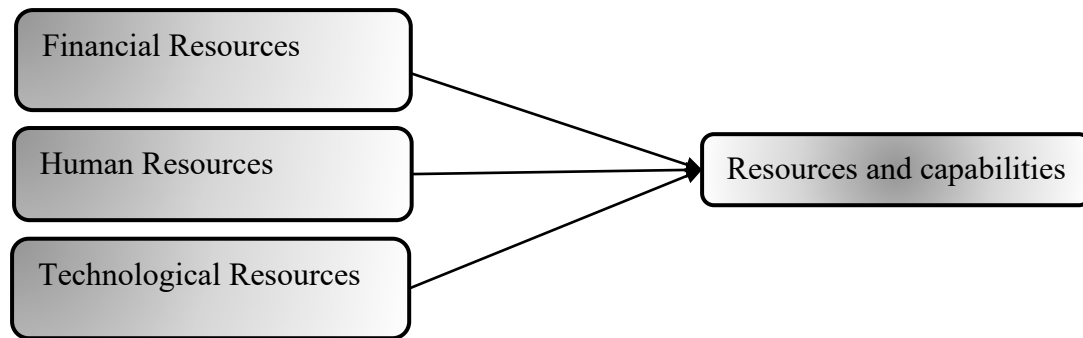


Figure 5.4: Resources and capabilities measures

In recent literature, particularly those who contributed to the RBV approach, many constructs have been proposed to denote various purposes, including resources, capabilities, competencies, skills, factors, and assets (Knecht, 2013). As shown in Figure 5.4, this study will use the term "organisational resources" to include all *financial*, *human*, and *technological* resources (Chew *et al.*, 2008). Technology, capital resources, and other sources of competitive advantage have traditionally been slightly ineffective in terms of demonstrating competitive advantage since they can be simply replicated, according to advocates of the resource-based organisational approach (Barney, 1991). Resource-based competitive advantage can only be achieved by transforming them into capabilities, the performance-based dimensions of competitiveness that give rise to competitive advantage (Chew *et al.*, 2008). Therefore, businesses use resources to formulate strategies, respond to competitive environment exigencies, and acquire capabilities that are tailored to their dynamic operational environments.

H3: Organisational resources/capabilities contribute positively to organisational performance.

5.3.4 Organisational Performance Measurement

Construction companies are experiencing great difficulty staying in business and competing due to the highly competitive environment of the construction industry (Tan *et al.*, 2012; Dansoh, 2005). Accordingly, the value of measuring organisational performance has become

evident. It necessitates the use of a set of equally supportive indicators that will explain how the strategies translate into performance levels (Kaplan & Norton, 2001; Spencer *et al.*, 2009).

In order to investigate organisational performance, it cannot be limited to one field of study or one method (Sirgy, 2002). In Richard, Devinney, Yip and Johnson's view (2009), this complex construct is crucial to allowing researchers and managers to evaluate companies over a period and contrast them with their counterparts. Organisational performance is a measure of how well an organisation fulfils its objective. Organisational performance has been conceptualised and assessed in multiple ways (Wilden *et al.*, 2013; Ortega, 2010). As reported by Yesil and Kaya (2013), a large body of research was conducted in the last 30 years on how to measure organisational performance by management researchers, business managers, and strategy researchers involved with performance measurement issues. Organisational characteristics, strategies, resources, and capabilities are often examined in association with performance through a number of performance measures. Measures of objective (return on investment, return on capital employed), as well as subjective (objective achievement, customer satisfaction) nature, have their proponents (Wilden *et al.*, 2013; Yesil & Kaya, 2013). The use of non-financial as well as financial measures of organisational performance has been verified by several scholars (see Table 5.1).

Table 5.1: Performance measures used in the research modified and adapted from Richard *et al.* (2009)

Author(s) and year	Method	Industry focused	Country of research	Measures of performance	Subjective\ Objective
Kale and Arditi, 2002,2003	Survey	Construction	USA	Contract award and profit growth	Subjective
Goerzen, 2007	Survey and secondary	Large MNEs	Japan	Operating return on sales, return on assets, operating return on capital	Objective
Elbanna & Child, 2007	Survey	textiles and clothing, chemicals, and food and beverage	Egypt	Relative financial performance, relative non-financial performance	Subjective

Crossland & Hambrick, 2007	Secondary	manufacturing and service firms	German, Japan, and USA	Return on assets, return on sales, sales growth, market-to-book value	Objective
Collis, Young, & Goold, 2007	Survey and secondary	Corporate headquarters	Europe, the U.S., Japan, & Chile	return on capital employed, total shareholder return, growth in sales turnover, overall effectiveness, and cost-effectiveness	Objective, quasi-objective
Chen & Miller, 2007	Secondary	US manufacturing firms	USA	return on assets, Altman's Z	Objective
Ho, 2015	Survey	Construction	Hong Kong	Profit margin on turnover	Subjective

5.4 Research Methods

The study covers the determinants of differentials in the performance of New Zealand construction companies. A comprehensive literature review was used as a basis for the quantitative approach used in the study. Through analyses of the population sample, the questionnaires provide quantitative or numerical information about demographics, behaviour, and opinions (Creswell, 2009). A sample of construction companies in the New Zealand industry is used to determine population size in this study (Ghobadian & O'Regan, 2006) by relying on a non-response bias technique. For the purpose of sampling, construction organisations involved in construction were obtained. From the 65,320 construction organisations registered in New Zealand (Stats NZ, 2020), 320 samples were chosen based on simple random sampling methods. The sample size (320) for this study was determined from minimum sample size estimates, following Ankara's (2007) equation.

$$ss = \frac{z^2 p(1 - p)}{c^2}$$

Where: ss (sample size), z (standardised variable, P (percentage picking a choice, expressed as a decimal), and c (confidence interval, expressed as a decimal).

CEOs, Directors, and practitioners with extensive knowledge of their organisations' strategic goals completed the questionnaire. A link on Qualtrics was provided to the organisations that

were invited to complete a questionnaire survey online. The internet-based tool Qualtrics assists in conducting and evaluating surveys (Qualtrics, 2020). There were 101 responses at the end of the survey, which is equivalent to an approximately 30% response rate. This rate of response is considered sufficient for generalising the results of a construction management study (Idrus & Newman, 2002). The demographic data of the participating businesses are presented in Table 5.2. A measurement scale that has been thoroughly tested in other countries was used to make sure that the survey questions could not be interpreted as incorrect or correct.

Table 5.2: Demography of organisations surveyed

Demographic information	Frequency	Valid Per cent	Cumulative per cent
Yeas in business			
1-5 years	22	21.8	21.8
6-10 years	34	33.7	55.5
>10 years	45	44.6	100
Number of employees			
Less than 20 employees	29	28.7	28.7
20-50 employees	30	29.7	58.4
More than 50 employees	42	41.6	100

5.4.1 Measures

Independent Variables

Among the independent variables, this research included the characteristics of the organisation, competitive strategies, and the capabilities and resources relevant to the construction organisation (Dikmen & Birgönül, 2003; Price, 2003). As shown in Table 5.3, adequate measurements have been established for the structures described in the conceptual model of this study. Participants were asked to use a Likert scale of 1 (very low) to 5 (very high) to score the impact of these characteristics on their organisational activities.

The strategies for competitive advantage were compared using Porter's (1980) generic strategies: differentiation, cost leadership, and focus. This is consistent with other studies' approaches to considering generic typologies as dimensions rather than as mutually exclusive

classifications (Nandakumar *et al.*, 2010; Venkatraman & Ramanujam, 1986). On a five-point Likert scale ranging from 1 (very low emphasis) to 5 (very high emphasis), respondents were asked to indicate the degree of significance they assigned to each of the 11 items (differentiation-4; cost-leadership-4; and focus-3). Financial, human, and technological resources were employed in the study to examine the capabilities and resources of organisations. Five items measured technological resources, while four measured financial capital and human resources.

Table 5.3: Constructs for the study and sources of measurement items

Constructs	Variables	Sources
Organisational Characteristics	Organisational structure Management style Decision-making style	Amzat and Idris (2012); Lansley (1987); Russ et al. (1996); Shiraz et al. (1996).
Competitive strategies	Differentiation Cost leadership Focus	Kale and Arditi (2002); Nandakumar et al. (2010), Pamulu (2010)
Resources and capabilities	Financial Human resources Technology	Cheah et al. (2007); Lynch, 2012; Rush, Bessant, and Hobday (2007).
Organisational Performance	Financial perspective Customer perspective Internal business perspective Learning and Growth perspective	Kaplan and Norton, (1994); Chang, (2010).

Dependent Variable

On the topic of strategy research, there are a variety of viewpoints regarding how to conceptualise and assess organisations' performance (Venkatraman & Ramanujam, 1986). Subjective measures are considered more appropriate by some researchers than objective measures (Lukas *et al.*, 2001; Venkatraman & Ramanujam, 1987).

Allen *et al.* (2008) suggests that both measures have positives and negatives; however, this study includes both measures to examine performance determinants (Prnell *et al.*, 2006). According to Robinson *et al.* (2006), construction companies evaluate performance using a mix of financial and non-financial measures.

Balanced scorecard (BSC) is a tool commonly used in business management for measuring performance using a combination of objective and subjective measures (Rigby & Bilodeau, 2013). The BSC is a strategic management tool in the evaluation of construction performance, and a wide variety of companies have used it to evaluate their performance aiming at significant enhancements. The BSC complemented conventional financial measures with non-financial measures distributed within three additional perspectives. Using the BSC, managers can see the business from four essential perspectives. This includes answering four basic questions Kaplan & Norton, 2005):

- Customer perspective: What is the customer's perspective?
- Internal business perspective: What are the areas in which the business can excel?
- Learning and Growth perspective: Is it possible to keep on improving and creating value?
- Financial perspective: What does the company look like from the viewpoint of shareholders?

By explaining performance in four proposed perspectives, the BSC allows decision makers to generate potential value. The BSC structure helps companies to customise a relevant set of indicators for their strategy, vision, and realistic work environments for each perspective. The BSC involves creating a strategy map that provides performance objectives and expectations. It outlines how the strategy can be effectively implemented. The BSC identifies the relationships between indicators in the four perspectives involving different operations and relates them to the expected outcomes (Niven, 2008). This study adopts the balanced scorecard as a tool to measure the dependent variable. It measures financial and customers perspectives using four items each, learning and growth using three items and internal business process using five items.

5.5 Data Analysis and Results

5.5.1 Construct Reliability and Validity

In this study, component factor analysis (CFA) was employed to assess the validity of the measurement scales suggested by Hair *et al.* (2010). Statistical tests were conducted using SPSS to investigate both the reliability and validity of constructs. Furthermore, in various research studies (such as Hair *et al.*, 2010), Cronbach's alpha, variance percentages, factor loadings, and eigenvalues have been cited to be useful for constructing reliability measures using factor analysis. By reviewing the literature, the study ensured that the questionnaire items were valid by separating them from each other. This study examines the reliability of a scale that was leveraged to investigate the degree of consistency of multiple measurement variables (Hair *et al.*, 2010). Tables 5.4, 5.5 and 5.6 show the results of this test using the Cronbach alpha coefficient, with most of the components having a threshold above and below 0.70. Some researchers have proposed that Cronbach's alpha should be at a minimum of 0.70, but Nandakumar (2008) suggested that for exploratory research, such as the current study, a recommended value is 0.60.

Nearly all of the current study variables were adopted or adapted from the scales previously studied, but some of the measurement elements involved refining and testing the different reliability aspects before the data analysis. Therefore, the scale items were purified and optimised using exploratory principal component analysis (PCA) or a factor analysis of common scale generation and purification techniques described in previous studies (King *et al.*, 2012). In addition, the researchers used PCA to decrease the number of variables that measure each of the constructs as empirically as possible while maintaining the original information. Unlike factor analysis, PCA assumes no particular variance and that the total variance is equal to the common variance. This assumption is necessary to simplify data by

reducing the number of variables included in the regression models. Similarly, Ho (2016) argued that the original set of variables must be transformed into a smaller set of linear configurations that contribute to the majority of the variance.

Table 5.4: Principal component analysis result for the organisational characteristics constructs.

Items	Component	h2
Organisational Structure	1	
Management controls how individual employee works, or activities are spelt out.	0.583	0.340
Managers ensure integration & coordination of individual employee activities and align them to the company's strategies	0.833	0.694
The nature of the organisational structure encourages improving the strategy and delegation of authorities	0.787	0.619
Total (Eigenvalue)	1.653	
% of Variance	55.094	
Cronbach's alpha value	0.583	
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.571
Bartlett's Test of Sphericity	Approx. Chi-Square	34.606
	Df	3
	Sig.	0.000
Management Style	1	
Management makes decisions in the best interest of employee after consultation	0.845	0.713
Employees and Managers present ideas, ask questions, listen, and provide feedback.	0.802	0.644
Management recognises and rewards efficiency, excellence, openness, social skill, and contribution to decisions	0.829	0.687
Employees tend to more committed to goals when the management sets them	0.702	0.493
Total (Eigenvalue)	2.537	
% of Variance	63.436	
Cronbach's alpha value	0.805	
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.742
Bartlett's Test of Sphericity	Approx. Chi-Square	135.267
	Df	6
	Sig.	0.000
Decision-Making Style	1	
Managers encourage employees to focus on the key techniques, show independence and initiative in solving a problem (directive)	0.818	0.669
Management encourages analytic ideas and welcomes an alternative approach to the problem solving (analytical)	0.855	0.730
Managers strengthen creative and encourage independent action (conceptual)	0.860	0.740
Managers are aware of the socio-cultural attitudes of the employee, and they are being guided towards meaningful problem-solving strategies to create enabling environment (behavioural)	0.748	0.559

Total (Eigenvalue)	2.699	
% of Variance	67.471	
Cronbach's alpha value	0.839	
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	0.787	
Bartlett's Test of Sphericity	Approx. Chi-Square	158.766
	Df	6
	Sig.	0.000

Table 5.5: Principal component analysis result for the competitive strategy constructs

Items	Component	h2
Differentiation Strategy	1	
Achieving high quality in the constructed facility and beyond the requirements in the specifications	0.761	0.579
Being highly responsive to clients' requests	0.664	0.441
Achieving on schedule performance in construction operations and delivering constructed facilities	0.677	0.459
Introducing innovative financing methods	0.682	0.465
Total (Eigenvalue)	1.944	
% of Variance	48.611	
Cronbach's alpha value	0.637	
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.556
Bartlett's Test of Sphericity	Approx. Chi-Square	61.493
	Df	6
	Sig.	0.000
Cost Leadership Strategy	1	
Emphasis on production capacity utilisation	0.816	0.667
Emphasis on operating efficiency (e.g., productivity in production)	0.763	0.583
Emphasis on finding ways to reduce costs	0.754	0.569
Emphasis on price competition	0.691	0.478
Total (Eigenvalue)	2.296	
% of Variance	57.399	
Cronbach's alpha value	0.750	
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	0.632	
Bartlett's Test of Sphericity	Approx. Chi-Square	105.661
	Df	6
	Sig.	0.000
Focus strategy	1	
Targeting a specific segment (e.g., emphasising a provincial region or a specific group of consumers)	0.818	0.451
Offering unique products (e.g., unique function or design)	0.855	0.796
Offering products suitable for a high price segment	0.860	0.655
Total (Eigenvalue)	1.901	
% of Variance	63.382	

Cronbach's alpha value	0.703	
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	0.572	
Bartlett's Test of Sphericity	Approx. Chi-Square	70.216
	Df	3
	Sig.	0.000

Table 5.6: Principal component analysis result for the resources and capability constructs

Items	Component	h2
Financial Resources	1	
Ability to use the company's fund/finance to finance construction works	0.753	0.567
Ability to get equity-selling part of the company	0.766	0.587
Ability to secure debt or loan to fund expansion, improve profit ratio and improve cash-on-cash returns	0.877	0.768
Ability to secure debt or loan to fund expansion, improve profit ratio and improve cash-on-cash returns	0.729	0.532
Total (Eigenvalue)	2.454	
% of Variance	61.350	
Cronbach's alpha value	0.787	
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.659
Bartlett's Test of Sphericity	Approx. Chi-Square	132.007
	Df	6
	Sig.	0.000
Human Resources	1	
Strengthen the procedures for recruitment, training & promoting all levels of employees	0.837	0.700
Enhance reward programme for motivating and challenging employees	0.844	0.712
Development of organisation capabilities through the participation of top managers & technical personnel in professional development	0.711	0.505
Reduce absenteeism and maintain moderate staff turnover	0.745	0.555
Total (Eigenvalue)	2.472	
% of Variance	61.798	
Cronbach's alpha value	0.790	
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	0.768	
Bartlett's Test of Sphericity	Approx. Chi-Square	118.786
	Df	6
	Sig.	0.000
Technological Resources	1	
Effectively assess technological opportunities and threats	0.821	0.674
The company's R&D ensures allocation of resources efficiently	0.867	0.752
Encourage creativity and innovation	0.761	0.579
Technology is important for the company's market share as well as the quality of equipment.	0.871	0.759

The company is efficient at integrating the new technology into the business system and process	0.887	0.786
Total (Eigenvalue)	3.551	
% of Variance	71.010	
Cronbach's alpha value	0.896	
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	0.871	
Bartlett's Test of Sphericity	Approx. Chi-Square	290.070
	Df	10
	Sig.	0.000

According to Norušis (2012), more than one criterion is widely used when determining how many factors to retain by excluding components with eigenvalues of less than one. This criterion is the result of the requirement that all parameters have a variance of one. Thus, any variable with a variance less than one is excluded. Ho (2016) suggested another solution to search for a position in which there is a reasonably large gap between values, usually referred to as a scree test. Thence, the number of factors retained can be illustrated by calculating the curve above the horizontal path created by smaller eigenvalues. Using the main component solution, since variables are eliminated to minimise magnitude, the main factors will emerge first followed by several minor factors, each of which takes up merely a small proportion of the overall variance. As a result, visual judgment is used without consideration of predictive value.

Thus, the Kaiser-Meyer-Olkin (KMO) test for measuring data sampling adequacy (MSA) and the Bartlett sphericity test for each construct of the study were conducted to assess their suitability for further research. PCA considers data satisfactory when they meet the minimum requirements set out by the test. KMO values can range from 0 to 1, with a minimum of 0.50 suggested (Field, 2013). Accordingly, all KMOs for the study's constructs were higher than 0.5, which is well above the threshold. Next, the Bartlett test was applied. This test determines if the correlation matrix differs substantially when compared to the identity matrix. There was a significant relationship between the variables, which indicated that the data was suitable for analysis (Tabachnick & Fidell, 2013). It is visible from the structure of the eigenvalues in

Tables 5.4, 5.5 and 5.6, that the constructs are valid and reliable, even though the organisational structure construct shows little reliability (Haspeslagh *et al.*, 2012).

5.5.2 The Analysis Results

In Table 5.7, the study presents descriptive statistics and correlation coefficients between the variables employed. Pearson's analysis of the product-moment correlation coefficient was leveraged to assess further the nature of the relationship between the variables. As demonstrated in Table 5.7, the results of the correlations indicate that all research variables have significant correlations. This implies a strong link between competitive strategies, organisational characteristics variables and organisational performance perspectives. In absolute values, the correlation between latent variables was between 0.238 and 0.705. A high coefficient of correlation indicates a strong relationship between variables. According to Dancey and Reidy (2020), a correlation of 1 indicates perfect correlation, 0.70 to 0.90 indicates a strong correlation, 0.40 to 0.60 indicates a moderate correlation, and 0.10 to 0.30 indicates weak correlation. However, following Field (2013), the effect of these indicators suggests a correlation of ± 0.10 to a small effect, ± 0.3 to a medium effect, and ± 0.5 to a significant effect. Correlation coefficients between an organisation's financial resources and the customer perspective were revealed to be the highest ($r = 0.705$, $p < 0.01$). Management styles and decision-making styles were found to be significantly and positively correlated ($r = 0.703$, $p < 0.01$). This result conforms to those of Oyewobi *et al.* (2017). They argued that an organisation's management style influences decision making.

Table 5.7: Descriptive statistics of the variables used in the study.

Construct	Mean	Std. Deviation	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Organisational structure	3.9604	.68522	1												
2. Management style	3.9431	.81844	.568**	1											
3. Decision-Making Style	3.8837	.87790	.487**	.703**	1										
4. Differentiation strategy	3.7896	.66119	.489**	.470**	.581**	1									
5. Cost Leadership strategy	3.9183	.69292	.541**	.577**	.548**	.560**	1								
6. Focus strategy	3.6997	.78670	.326**	.245*	.446**	.593**	.321**	1							
7. Financial resources	3.7228	.83359	.487**	.508**	.534**	.532**	.581**	.421**	1						
8. Human resources	3.7847	.75914	.430**	.547**	.531**	.389**	.440**	.339**	.567**	1					
9. Technology resources	3.6614	.88351	.269**	.332**	.337**	.549**	.359**	.397**	.430**	.599**	1				
10. Financial perspective	3.7401	.67075	.300**	.292**	.338**	.450**	.407**	.444**	.473**	.328**	.468**	1			
11. Customer perspectives	3.8680	.68973	.280**	.238*	.342**	.569**	.434**	.530**	.478**	.329**	.481**	.705**	1		
12. Internal business process perspective	3.7010	.72808	.197*	.329**	.396**	.542**	.416**	.401**	.496**	.423**	.510**	.644**	.679**	1	
13. Learning and growth perspective	3.9967	.86730	.329**	.521**	.578**	.448**	.526**	.272**	.457**	.447**	.338**	.474**	.430**	.651**	1
**Correlation is significant at the 0.01 level (2-tailed).					*Correlation is significant at the 0.05 level (2-tailed).										

Table 5.8: Regression analysis result between variables and performance measures

	Model 1	Model 2	Model 3	Model 4
Independent Variables	Financial	Customers	Internal Business Proc	Learning and Growth
Organisational structure	0.013	-0.053	-0.250**	-0.150
Management style	0.003	-0.096	0.012	0.122
Decision-Making Style	0-.003	-0.032	0.018	0.298**
Differentiation strategy	-0.014	0.234*	0.309**	0.111
Cost Leadership strategy	0.139	0.179	0.117	0.293**
Focus strategy	0.192**	0.227**	0.059	-0.057
Financial resources	0.192**	0.158*	0.191*	0.069
Human resources	-0.115	-0.044	0.079	0.114
Technology resources	.0233**	0.159*	0.164*	0.031
R	0.608	0.678	0.660	0.654
R²	0.370	0.460	0.436	0.428
ΔF	5.935***	8.597***	7.803***	7.571***

*p<0.10; **p<0.05; ***p<0.01

Organisational characteristics, competitive strategy, resources, capabilities, and organisational performance are plotted in Table 5.8. Results from Model 1 indicate a significant positive relationship between financial and technology resources and financial measures of performance of an organisation. Furthermore, merely focus strategy was significantly related to an organisation's performance in terms of finances. According to model 2, financial and technological resources, as well as differentiation and focus strategies, have a positive influence on customer perceptions of organisational performance. The results of regressing the internal business process perspective with the competitive strategies, organisational characteristics, and resources and capabilities are reported in model 3 in table 5.8. The organisational structure has a negative but significant relationship with the internal business process measure of organisational performance. Finally, model 4 represents the regression relationships between the predictors mentioned above and the organisational performance's learning and growth perspectives. Only two predictors have a significant and positive relationship: decision-making style and cost leadership strategy.

5.6 Discussion

In models 2, 3, and 4, altogether subjective measures are used, demonstrating support for Kaplan and Norton (2001) and Hoque (2004), whose studies established that non-financial measures function as more effective indicators of performance of companies. However, the results of model 1 were in agreement with prior reports that correlated financial measures of organisational performance with organisational characteristics, resources, competitive strategies, and capabilities (Oyewobi *et al.*, 2019; Teeraztansirikool *et al.*, 2013; Gosselin, 2005; Oyewobi *et al.*, 2015). The regression results indicate, however, that hypothesis 1 cannot be entirely ruled out given that organisational characteristics (such as organisational structure and decision-making style) are significantly related to two measures (the internal business process and the learning and growth perspectives for organisations, respectively) of organisational performance. Neither the financial measure of performance nor the customer perspective is significantly associated with the characteristics. Those findings are contrary to those of an earlier study by Oyewobi *et al.* (2017), who discovered significant relations between subjective and objective measures of performance and organisational characteristics.

It is possible to accept hypothesis 2 since competitive strategies (differentiation, cost leadership, and focus strategies) contribute significantly to organisation performance. The findings of the study align with those reported by Gosselin (2005) and Olson and Slater (2002), who found that cost leadership organisations are driven by financial performance measures. Additionally, previous research showed that competitive strategies (differentiation and cost leadership) are associated with return on capital employed (ROCE) as a way to measure organisational performance (Oyewobi *et al.*, 2019; Baines & Langfield-Smith, 2003). An organisation's competitive strategies determine how it achieves its goals by creating competitive advantages. By implementing competitive strategies, the company enhanced customer value compared to its competitors. It is possible to differentiate yourself, gain cost

advantages, or focus on a particular niche market as a competitive strategy. A company's goal of selecting one or more competitive strategies, for instance, cost leadership, differentiation, or focus, is to create an advantage so they can achieve their business goals.

As financial, customer, and internal business process measures of organisational performance have a significant relationship with financial resources and technology, Hypothesis 3 cannot be totally dismissed. When measuring the performance of an organisation, resources and capabilities were related to learning and growth, but not significantly. These results align with the findings of Isik *et al.* (2010) regarding the greatest impact on a company's performance being resources and capabilities. Resources and capabilities of a company must be valuable, rare, unique and they should lack alternatives in order to improve its performance according to the resource-based approach outlined by King and Zeithaml (2001) and Barney (1991). In order to realise superior performance, the conditions need to be met in order to transform resources and capabilities into competitive advantages. In this study, resources and capabilities positively predicted organisational performance. However, Chew *et al.* (2008) and Newbert (2008) argue that organisations need to align their resources and capabilities with competitive strategies in order to improve organisational performance levels.

The primary goal of the implementation of competitive strategies is to enable an organisation to attain enhanced performance and a competitive edge over others. In strategic management, however, there is no one-size-fits-all strategy because no one strategy can sustain competitiveness in a company forever or under all conditions (Tan *et al.*, 2012). Based on empirically explored hypotheses associating competitive strategies and organisational performance in the New Zealand construction sector, this study explores financial and non-financial variables to provide insight into what factors influence competitive strategies and business performance. Taking into account that different performance objectives may be

associated with different strategies, the study used both objective and subjective methods to assess performance (Parnell *et al.*, 2006; Gosselin, 2005). The results of this study show that construction companies in New Zealand have adopted all three generic strategies (differentiation, cost leadership, and focus strategies) to gain competitive advantage. It corroborates the results from those undertaken in other countries (such as the UK, Hong Kong, and South Africa) including Betts and Ofori (1992); Price and Newson (2003); Tan *et al.* (2012); and Oyewobi *et al.* (2019).

This finding implies that New Zealand construction companies consider the focus strategy as a means to improve their financial performance. Previous studies have discussed this matter in a different setting than New Zealand construction; that gap was covered in this study. The result is consistent with Nandakumar *et al.*'s (2010) findings but in the context of manufacturing enterprises in the United Kingdom. It highlights the inadequacies of generic strategies in explaining performance eclecticism. However, according to Spanos *et al.* (2004), organisations that use a differentiation strategy are less profitable than organisations without a distinct strategy. Given the negative relationship found between differentiation strategy and financial measure of organisational performance, this may be applicable in the New Zealand context.

5.7 Conclusion

As critical players in the New Zealand construction industry, construction companies struggle to stay competitively relevant for long-term survival and significant growth. The current study investigates the determinants of organisational performance among these organisations. This study demonstrated that organisational characteristics (decision-making style and management style) are essential predictors of organisational performance. It further means that once they are organised into capacities, resources independently do not ensure performance. However, capabilities need not always contribute to superior performance; instead, performance is

influenced by the sense in which capabilities are implemented. Competitive strategies are significantly and positively linked to performance.

Among the predictors of organisational performance that must be of concern to organisation-level management are the characteristics, capabilities, and resources of an organisation. As the results show, all these determinants have a strong connection to organisational performance.

The findings have limitations that could mitigate the generalizability of the overall results. First, since the information was obtained within a short time span, the analysis was cross-sectional. Secondly, despite the theoretical backing and empirical validity of the variables and constructs used, the analysis provides no guarantee that the measures used are faultless. Finally, the results' generalisability could be limited due to sample size limitations, as a larger sample may have provided for more practical conclusions. Further research is required on this subject to ensure that representation of determinants or organisational performance affects the industry. The current results will serve as the foundation for future studies.

5.8 Epilogue

This chapter was performed to study the relationships between competitive strategies, organisational characteristics, resources and capabilities and organisational performance in the New Zealand construction industry. It employed the regression method to analyse these relationships. This chapter designed to address the study's third objective as stated in Chapter 1. The following chapter will study the correlation between business environment, CRM, and organisational performance in the New Zealand construction industry.

Chapter 6 BUSINESS ENVIRONMENT, CRM, AND SUSTAINABLE PERFORMANCE OF CONSTRUCTION INDUSTRY: A LINEAR REGRESSION MODEL

This chapter is extracted from:

Alqudah, H. E., Poshdar, M., Oyewobi, L., Rotimi, J. O. B., & Tookey, J. (2021). Business Environment, CRM, and Sustainable Performance of Construction Industry in New Zealand: A Linear Regression Model. *Sustainability*, 13(23), 13121.

6.1 Prologue

Increasing fragmentation of the construction industry makes it risky and more competitive. Construction management researchers have become intrigued by the factors influencing performance differentials as a consequence of such fierce competition. This chapter examines the relationships between two of these sources, namely, business environment and customer relationship management and their effect on construction organisational performance (Objective 3). It develops a model to explain performance differential between construction organisations in New Zealand by using the linear regression technique. A questionnaire was administered to professionals within construction organisations. One hundred and one usable responses were analysed for descriptive statistics and correlations. Following the balanced scorecard performance metric, the organisation's performance was measured using metrics related to customers, financials, internal processes, and growth and learning. Results indicated that environmental dynamism had a significant correlation with internal business processes as well as perspectives on learning and growth. There is a significant correlation between organisational performance and environmental munificence from the viewpoints of financial performance, customer satisfaction, and internal business processes. Customer relationship management was significantly associated with all performance perspectives except learning

and growth. This study contributes in providing an integrative framework to enterprises, which is a substantial development in the current literature of CRM practises and determinants of organisational performance. The most important managerial implications is that CRM practises can clearly be utilised to generate valuable customer information that can be used to improve organisational performance.

6.2 Introduction

In New Zealand, the construction industry is dynamic and often unpredictable. Such dynamic marketplaces, according to Lee *et al.* (2012), boosts the level of competition in the market. It may be used to describe the construction industry in New Zealand, which has a highly competitive market due to its massive infrastructure development programmes. As a result, the construction industry has become more fragmented, and profitability has shrunk (Oyewobi *et al.*, 2019). That result was due to the high intensity of competition which led the big organisations to control the market. A number of reasons have supported growth in the New Zealand construction sector. While population increase has driven the growth in New Zealand's north part residential sector, the majority of construction work in the south part has been related to post-earthquake reconstruction. Residential, non-residential, and infrastructure building permits were all issued in greater numbers year over year, increasing the number of jobs in these industries. Although it appears that New Zealand's construction boom is never-ending, it has been established that the industry has reached its peak, as construction companies are unable to meet market demand. The construction sector will not be able to outperform itself (ANZ, 2017). A survey conducted from 2015 to 2020 showed that the survival record of organisations in all construction industry sectors does not exceed 50% (Stats NZ, 2021). According to the same survey, only 85% of the companies survive after the first year (Stats NZ, 2021). To maintain a competitive advantage and stay sustainable in both their dynamic as

well as hypercompetitive markets, construction companies must strive to improve constantly (Rudd *et al.*, 2008).

In a dynamic market, strategic management has different aspects that explain performance differentials. Under the realm of strategic management, CRM (customer relationship management) is an important aspect that influences business success significantly (Mumuni & O'Reilly, 2014). It was posited as a primary factor of success in a competitive world. Essentially, CRM is about establishing and managing relationships with important customers. Theoretically, it has been argued to strike the core of the marketing philosophy (Morgan & Hunt, 1994). Numerous studies have demonstrated the positive impact of CRM on organisational performance. Effective CRM implementation has been linked to desirable business results such as improved customer satisfaction, retention, and company profitability (Reinartz *et al.*, 2004).

It is commonly assumed that successful companies' strategies and structures should be in synchronise with their business environment to achieve optimised performance (Dess & Keats, 1987). Any organisation that operates in a dynamic and constantly changing environment, such as construction companies, finds it challenging. The construction industry is frequently perceived as uncertain and as riskier than any other industry (Balatbat *et al.*, 2001). The difficulties, threats, and constraints facing construction organisations have placed great pressure on them to employ measures to ensure their long-term viability. The nature of organisations is such that they work around threats simultaneously, either avoiding them or transforming them into organisational advantages to maximise efficiency.

This study provides a theoretical framework with two constructs to describe organisational performance. Several studies have determined the effect of CRM on performance (Mumuni & O'Reilly, 2014). Others have studied the business environment with organisational

performance. Few studies have examined how business environments and CRM impact organisational performance. Based on this trinity of knowledge, the strategy can be applied to improve construction organisational performance in future research.

To address this gap, this chapter starts with literature review, developing a conceptual model and research hypotheses to be tested. Before diving into the presentation and discussion of the research findings, the research methods and methodology are explained. Quantitative research approach using questionnaire was used to collect data. Finally, the chapter presents the conclusions, discusses the limits of the research, and suggests areas for future research.

6.3 The Structure of the Proposed Framework and Its Related Hypotheses

The framework incorporates *customer relationship management* and *business environment* as two main constructs (Figure 6.1). With these, organisations could achieve sustainable competitive advantage and superior performance. Accordingly, it involves two hypotheses about the relationship between each construct and organisational performance.

The following subsections address the key relationships in this conceptual framework.

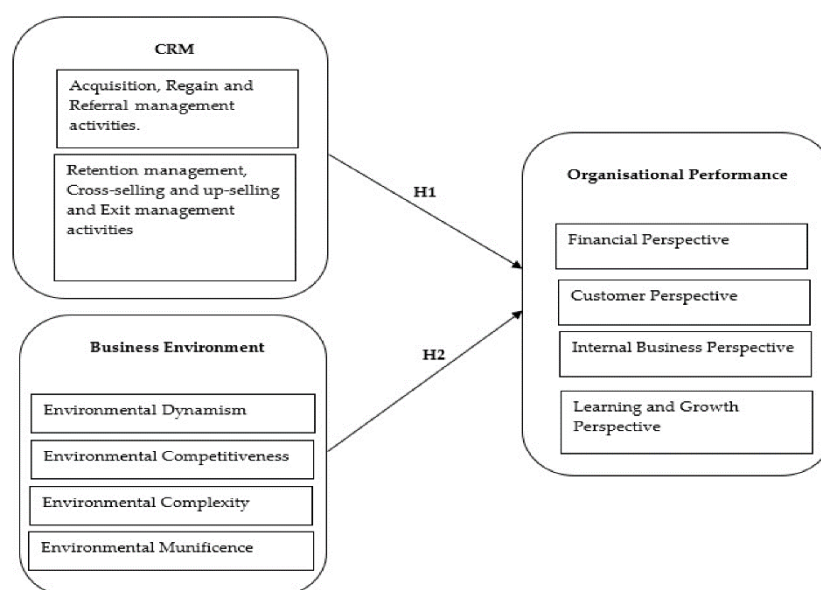


Figure 6.1: Conceptual framework

6.3.1 *Customer Relationship Management (CRM)*

This study investigates CRM from a strategic point of view. In order to enhance partnerships, it is not as important to advertise and invest in traditional brand-related activities, as to develop systems that supplement the customer experience" (Frow and Payne, 2007: p. 91). Companies and customers are supposed to benefit from CRM initiatives (Boulding *et al.*, 2005; Osarenkhoe, 2006; Parvatiyar & Sheth, 2001). In turn, this enhances shareholder value by enabling strategically appropriate relationships with key customers (Mumuni & O'Reilly, 2014).

Using relationship marketing strategies and information technologies, CRM recognises and co-creates consumer value. Information, technology, and applications are used to support cross-functional integration between systems, people, activities, and marketing capabilities (Payne & Frow, 2005: p. 168). CRM from a business perspective involves the acquisition, retention, and collaboration with customers, among other tasks (Morgan & Hunt, 1994; Frow & Payne, 2007; Parvatiyar & Sheth, 2001; Payne & Fow, 2005; Verhoef & Langerak, 2002).

CRM activities include three primary characteristics at the customer-facing level (Reinartz *et al.*, 2004): relationship initiation, maintenance, and termination. During the relationship initiation stage, primary tasks were to acquire new customers (customer acquisition activities), retain lost customers (customer regain activities), and implement the necessary customer analysis to support the aforementioned two activities. During the maintenance stage of a relationship, customers are re-engaged, cross-sold and upsold, and referrals are managed. Specific analysis of the customer (maintenance analysis) supports each of these tasks. The termination procedure incorporates customer exit management as well as the necessary analysis for its implementation.

It is not surprising that both practitioners and academics are interested in CRM's contribution to organisational performance, given the ability to deliver value to customers and companies (Reinartz *et al.*, 2004; Ang & Buttle, 2006; Camarero-Izquierdo *et al.*, 2005). However, the verdict on CRM's effect on organisational performance is still mixed. According to several studies conducted in the decade leading up to 2010, such as Gartner Group, Butler Group, and AMR Research, CRM project performance was abysmal, with failure rates as high as 70%. Numerous academic studies have documented the positive impacts of CRM on performance, including increased customers' awareness (Mithas *et al.*, 2005), a greater sense of loyalty (Jayachandran *et al.*, 2005), and a higher sense of satisfaction among customers (Mithas *et al.*, 2005; Jayachandran *et al.*, 2005; Srinivasan & Moorman, 2005; Ryals, 2005).

Rather than measuring the effects of CRM on customer-related variables to measure performance, Reinartz *et al.* (2004) adopted a strategy-based approach across firms that is more comprehensive in nature. An analysis of CRM's impact on revenue, profitability, and business growth was conducted. Their study found that CRM implementation contributed to improved relationship formation and that relationship maintenance had the greatest effect. Furthermore, they found that CRM-compatible organisational alignment and termination and initiation of relationships have essential interactions. Which suggest that organisations that develop incentives and schemes to promote CRM-compatible behaviour will be more effective. Consequently, a significant portion of the empirically supported academic literature suggests that CRM systems and their implementation positively impact business performance.

H1: Customer relationship management (CRM) activities relate positively to organisational performance.

6.3.2 The Business Environment

Organisations engaged in the construction industry operate globally within a rapidly changing environment. They often struggle to survive in this turbulent environment when they cannot respond to environmental uncertainty (Enshassi *et al.*, 2009). This is because the business operates in a general environment similar to that of other industries, which can be volatile (Dansoh, 2005). This view is supported by Harrison and Pelletier (1998), who state that organisations do not operate in a vacuum; rather, they are shaped by their environment. An organisation's environment is the means of survival. The relationship between internal and external influences of an organisation is what Duncan (1972) saw as the business environment. It consists of specific physical and social factors inside and outside organisational boundaries. These factors directly affect individuals and groups' decision-making behaviour.

Several studies have listed latent environmental variables in strategic management literature that jointly whittle the business environment. For example, Lenz and Engledow (1986) use five dimensions to evaluate and identify business environments: industry structure, cognitive, organisational field, reliance on ecology and resources, and era model. In the current research, four environmental variables defined by Mintzberg *et al.* (1979), Dess and Beard (1984), Ward *et al.* (1996), and Ray (2004) are considered, including *munificence*, *complexity*, *competitive intensity*, and *dynamism*.

The concept of *munificence* describes how organisations function in a context of abundant resources and opportunities and how they compete for these opportunities and resources (Ray, 2004). Usually, a high degree of munificence shields organisations from environmental stresses because it provides financial and operational slack that can promote organisational stability and development if used effectively (Cyert & March, 1963). It is imaginable, however, that organisations may have "too much of a good thing." On the one hand, organisational slack can

be bad for efficiency because it causes managers to become complacent about effectively tracking performance enhancement. Small errors left unattended may lead to more severe problems in the organisation and in the atmosphere, which can negatively affect morale and productivity. In this way, the broken window hypothesis is supported. In contrast, it leads to overconfidence in their abilities to provide better and more services. Accordingly, environmental munificence either has a positive linear relationship with organisational performance or a negative U-shaped relationship (Andrews & Johnsen, 2012).

A company's market and service variability and dispersion are examples of its environmental *complexity*. A heterogeneous environment typically involves a wide range of customers, suppliers, and service users. It also works through an extensive range of geographical areas in a dispersed environment. Nevertheless, it may be possible for organisations to tailor the services they provide to the customer's needs more effectively if they have a diverse customer base. Hence, environment complexity has a direct relationship with organisational performance.

A company's *competitive intensity* refers to the degree to which it is threatened by environmental forces such as market and regulatory forces (hostility due to competition) while functioning within the construction industry.

Finally, *dynamism* is caused by the acts of industry competitors or customers, such as technological developments and variations in aggregate demand (Chi *et al.*, 2009; Nandakumar *et al.*, 2010). Whenever there is instability and turbulence of external circumstances of that change, environmental dynamism results due to the pace of the change. For organisations to cope with environmental instability and turbulence, higher financial and human resources are usually required (Dutton *et al.*, 1983). Nevertheless, it is conceivable that demonstrating increased sensitivity to an organisation's external constraints will sharpen managerial reflexes

and trigger enhanced creativity. Thus, producing better organisational performance, at least until environmental dynamism becomes strong enough to prevent any unsuccessful management response. Dynamic environments affect organisational performance (Fayzollahi *et al.*, 2013). Since the relationship between environment dynamics and organisational performance has many facets, it is conceivable that the disparities in the qualitative results achieved by firms could be impacted by their environment dynamics (Peteraf *et al.*, 2013).

In each of these approaches, assumptions are made about how the environment functions and describes the nature and degree of environmental change and how managers adapt to these environments (Ting *et al.*, 2012). As a result, previous studies (Galbraith, 1973; Lawrence & Lorsch, 1967; Thompson, 1967) have shown that an organisation's environment can substantially impact the performance level of that organisation.

H2: The business environment variables are significantly related to organisational performance.

6.4 Materials and Methods

6.4.1 Organisational Performance Measurement

Even though performance measurement is an important component of organisational decision making and judgement, the term is difficult to define and measure (Oyewobi *et al.*, 2015; Keats & Hitt, 1988). According to Wu (2009), performance measures how effective and efficient an organisation's mechanism/process achieves the targeted results. Organisations have traditionally measured their performance using financial terms like return on investment, returns on assets, and turnover. However, according to Kagioglou *et al.* (2001), organisations' reliance on financial measurements can only help them recognise the past performance but not its contributors. Therefore, a comprehensive performance management system must consider

non-financial as well as financial metrics (Bourne *et al.*, 2000). Several studies confirm the value of financial and non-financial measures of business performance, which is illustrated in Table 6.1.

Table 6.1: Some performance measures used in the research modified from Richard *et al.* (2009)

Author(s) and year	Method	Industry-focused	Country of research	Measures of performance	Subjective\ Objective
Kale and Arditi, 2002,2003	Survey	Construction	USA	Contract award and profit growth	Subjective
Goerzen, 2007	Survey and secondary	Large MNEs	Japan	Operating return on sales, return on assets, operating return on capital	Objective
Elbanna & Child, 2007	Survey	textiles and clothing, chemicals, and food and beverage	Egypt	Relative financial performance, relative non-financial performance	Subjective
Crossland & Hambrick, 2007	Secondary	manufacturing and service firms	Germany, Japan, and USA	Return on assets, return on sales, sales growth, market-to-book value	Objective
Collis, Young, & Goold, 2007	Survey and secondary	Corporate headquarters	Europe, the U.S., Japan, & Chile	return on capital employed, total shareholder return, growth in sales turnover, overall effectiveness and cost-effectiveness	Objective, quasi-objective
Chen & Miller, 2007	Secondary	US manufacturing firms	USA	return on assets, Altman's Z	Objective
Ho, 2015	Survey	Construction	Hong Kong	The profit margin on turnover	Subjective

This study uses the balanced scorecard (BSC) tool. In corporate management, it is one of the most widely used methods of measuring performance by combining both financial and non-financial metrics (Rigby & Bilodeau, 2013). Drs. Kaplan and Norton worked on the creation of the Balanced Scorecard (BSC). In the framework of evaluating construction performance, the BSC is a strategic management tool that many construction companies have used to evaluate and enhance their performances. BSC explains performance in four proposed perspectives and allows decision-makers to generate potential value. The BSC structure helps companies customise a relevant set of indicators for their strategy, vision, and realistic work environments for each perspective. BSC has included a strategy map that provides performance objectives and expectations. It outlines how the strategy can be effectively implemented. It also

enables the relationships between indicators in the four BSC perspectives to be established in order to relate the different operations in relevant departments to the expected outcomes (Niven, 2002). Business from four critical perspectives can be examined through BSC. The following questions can be answered through BSC (Kaplan & Norton, 2005):

- Customer perception: How do customers view us?
- Internal perspective: Where does the business need to excel?
- Learning and Growth perspective: Can the company keep improving and build value?
- A financial perspective: How does the company appear to shareholders?

6.4.2 Sample Characteristics and Questionnaire Development

The data used in this research were obtained from 65,320 listed construction organisations involved in structural and general construction work in New Zealand. The sample consisted of 320 companies using a simple random sampling technique. The study estimated the minimum sample size using equation (1) (Ankrah, 2007).

$$ss = \frac{z^2 p(1 - p)}{c^2} \quad (1)$$

Where: ss (sample size), z (standardised variable, P (percentage picking a choice, expressed as a decimal), and c (confidence interval, expressed as a decimal).

The data were collected through a questionnaire sent by email. Qualtrics (Qualtrics, 2020) was used as the data collection instrument. This simple web-based survey tool is used for conducting surveys, evaluating products, and collecting data. One hundred and one responses were received at the end of the survey period, close to a 30% response rate. This response rate is considered sufficient to generalise the results (Ankrah, 2007). The questionnaire was constructed using closed questions and a five-point Likert scale to evaluate respondents' answers to the dimensions under consideration. Table 6.2 presents the demographics of the

participants. The survey questions have been carefully crafted to be free of wrong or right answers, using a measurement scale that has been thoroughly tested in other countries. The objective of the survey questions has been to measure business environment and CRM and their effect on the organisational performance.

Table 6.2: Organisational demographics

Demographic information	Frequency	Valid Percent	Cumulative per cent
Years in business			
1-5 years	22	21.8	21.8
6-10 years	34	33.7	55.5
>10 years	45	44.6	100
Number of employees			
Less than 20 employees	29	28.7	28.7
20-50 employees	30	29.7	58.4
More than 50 employees	42	41.6	100

6.4.3 Variables and Their Measurement

The data collection involved variables representing the *business environment* and *customers relationship management* as the two independent variables and *organisational performance* as the product of the proposed framework. All variables are listed in Tables 6.3.

Table 6.3: Variables of the study

Variables	Measures	Sources
Customer Relationship Management	Acquisition, Regain and Referral management activities. Retention management, Cross-selling and up-selling and Exit management activities	Mumuni & O'Reilly (2014)
Business Environment	Environmental Dynamism Environmental Competitiveness Environmental Complexity Environmental Munificence	Kabadayi et al. (2007), Nandakumar et al. (2010), Auh & Menguc, (2005).
Organisational Performance	Financial perspective Customer perspective Internal business perspective Learning and Growth perspective	Kaplan & Norton, (1996), Chang, (2010).

Dependent variable

Divergent perspectives exist on the significance of various approaches used to conceptualise and analyse organisational performance in strategy research (Venkatraman *et al.*, 1986). Subjective assessment is considered to be preferable to objective assessment by some

academics (Lukas *et al.*, 2001; Venkatraman *et al.*, 1987). While Allen *et al.* (2008) believe that these two measures have innate positives and negatives, this study uses both to investigate the relationship between determinants and performance (Parnell *et al.*, 2006).

With BSC, traditional financial indicators were augmented with non-financial factors based on three additional perspectives (customer perspective, internal business perspective, and learning and growth perspective).

In this particular study, four items were used to assess financial and customer perspectives, three indicators to assess learning and growth, and five items to assess internal business processes (Kaplan & Norton, 1996; Chang, 2010).

Independent Variables

Business environment and customer relationship management were defined as the independent variables of the study. Table 6.3 describes the variables that are involved in this study's conceptual framework. The dimensions of the environment were utilised to measure the business environment. The study assessed these aspects through notions like dynamism, munificence, complexity, and competitive intensity. In choosing these dimensions, the researchers followed the earlier studies (Nandakumar *et al.*, 2010; Auh & Menguc, 2005; Kabadayi *et al.*, 2007). The study used three items to determine munificence environment, environmental complexity, competitive intensity, and dynamic environment. On a five-point Likert scale from 1 (very low) to 5 (very high), participants were asked to describe any changes in their work environments and the impact of the variables.

Customer relationship management's dimensions were included by acquisition, regain and referral management activities and retention, cross-selling and up-selling and exit management activities. The items to measure these dimensions were modified and adapted from Mumuni

and O'Reilly (2014) with 4 and 6 items to determine each of them, respectively. Respondents were asked to describe the effect of the practices on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

6.4.4 Data Analysis

The relationship between business environment dimensions, CRM dimensions, and organisational performance was assessed using multiple linear regression. It is a useful statistical tool that evaluates the relationships between a group of independent variables and one dependent variable (Marôco, 2010). A six-predictor multiple linear regression model was proposed in this research. The six predictor variables are Environmental Dynamism (X1), Environmental Competitiveness (X2), Environmental Complexity (X3), Environmental Munificence (X4), Acquisition, Regain and Referral management activities (X5), and Retention management, Cross-selling and up-selling and Exit management activities (X6). The proposed multiple linear regression model's equations are as follows:

$$Y (D1) = \beta_0 + \beta_1 (X1) + \beta_2 (X2) + \beta_3 (X3) + \beta_4 (X4) + \beta_5 (X5) + \beta_6 (X6) + \varepsilon \quad (2)$$

$$Y (D2) = \beta_0 + \beta_1 (X1) + \beta_2 (X2) + \beta_3 (X3) + \beta_4 (X4) + \beta_5 (X5) + \beta_6 (X6) + \varepsilon \quad (3)$$

$$Y (D3) = \beta_0 + \beta_1 (X1) + \beta_2 (X2) + \beta_3 (X3) + \beta_4 (X4) + \beta_5 (X5) + \beta_6 (X6) + \varepsilon \quad (4)$$

$$Y (D4) = \beta_0 + \beta_1 (X1) + \beta_2 (X2) + \beta_3 (X3) + \beta_4 (X4) + \beta_5 (X5) + \beta_6 (X6) + \varepsilon \quad (5)$$

Where, Y (D1) = Dependent variable (financial perspective), Y (D2) = Dependent variable (customers perspective), Y (D3) = Dependent variable (internal business process perspective), Y (D4) = Dependent variable (learning and growth perspective), β_0 = constant, and ε = error.

Construct Reliability and Validity

To assess the reliability of measurement scales, the study employed the Component Factor Analysis (CFA) technique (Hair *et al.*, 2010). The constructs were tested for reliability and

validity using SPSS (IBM Corp., 2020). To construct reliability measures using the factor analysis technique, Cronbach's alpha, percentages of variance, factor loadings, and Eigenvalues were used. It conforms to the recommendations of prior studies such as Hair *et al.* (2010). The research ensured the items' validity through a comprehensive literature review to distinguish the questionnaire items. The reliability of the scales used to measure the consistency of the multiple measurements has been discussed by Hair *et al.* (2010). As shown in Tables 6.4 and 6.5, the Cronbach alpha coefficient was used to determine that some components returned a coefficient threshold greater than or lesser than 0.7. Previous researchers have advocated that Cronbach's alpha value should be at least 0.7. However, Nandakumar (2008) argues that 0.6 would suffice in exploratory research.

Almost all the current study variables were adopted or adapted from the scales previously studied. Nonetheless, some of the measurement elements had different reliability aspects. They were refined and tested before the data analysis. Therefore, the scale items were purified and optimised using an exploratory principal component analysis (PCA) of common scale generation and purification techniques described in previous studies (King & Zeithaml, 2001). PCA was also used to minimise the number of measures empirically while keeping as much original information as possible by taking into account the number of items that measured each variable. Unlike factor analysis, PCA assumes no particular variance and that the total variance is equal to the common variance. This assumption was necessary to simplify data by reducing the number of variables included in regression models. This view was endorsed by Ho (2016), who stated there was a need to reduce the number of original variables to a smaller set of linear configurations that accounted for the majority of the variance.

However, Norušis (2012) noted that more than one criterion is frequently employed to assess the number of factors to be retained by excluding components with eigenvalues less than one.

For this criterion, all parameters must have a variance of one. Therefore, all factors with a variance less than one were excluded. Cattell (1966) suggested a scree test as an alternative solution. It searches for a position in which a reasonably large gap exists between values. Calculating the curve above the horizontal path from smaller eigenvalues would therefore reveal the total number of factors retained. In primary component analysis, variables are removed to minimise the magnitude, so the most important factors emerge first, followed by a number of minor factors, each making up a small fraction of the total variance. Visual judgment was used without regard to predictive value in this approach.

To assess the suitability of the data for further study, the Kaiser-Meyer-Olkin (KMO) method was used with the Bartlett sphericity test for each construct to determine data sampling adequacy (MSA).

$$KMO = \frac{\sum_{j \neq k} \sum r_{jk}^2}{\sum_{j \neq k} \sum r_{jk}^2 + \sum_{j \neq k} \sum p_{jk}^2} \quad (6)$$

Where r_{jk} was the simple correlation coefficient between variables j and k , and p_{jk} was the partial correlation coefficient between variables j and k . The test established the minimum conditions that the data must meet to be deemed suitable for PCA. KMO values would range from 0 to 1, with a minimum of 0.50 suggested (Field, 2013). The KMO for the study constructs were all above 0.5, which was above the acceptable threshold. The Bartlett test (Tabachnick & Fidell, 2013), which tested whether the correlation matrix differed significantly from the identity matrix, indicates that the data are appropriate for analysis based on the significant relationship between the variables. The structure of the eigenvalues shown in Tables 6.4 and 6.5 confirmed the validity and reliability of the constructs (Haspeslagh *et al.*, 2012).

Table 6.4: Principal component analysis result for the customer relationship management constructs

Items	Component	h2*
Customer Acquisition, Regain & Referral Activities	1	
We differentiate our customer attracting efforts based on customer value	0.744	0.554

We have a systematic process for trying to regain the valued past customers	0.747	0.557
We provide current customers with incentives for referring to new potential customers	0.822	0.676
We try to manage the customer referral process actively	0.818	0.668
Total (Eigenvalue)	2.456	
% of Variance	61.408	
Cronbach's alpha value	0.790	
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.586
Bartlett's Test of Sphericity	Approx. Chi-Square	162.622
	df	6
	Sig.	0.000
Retention, Cross-and-Upselling & Exit Management Activities	1	
We maintain regular interactive communications with our customers	0.667	0.444
We have customer loyalty or retention programs	0.787	0.620
We have a system that allows us to recommend different products/services to customers based on their previous demand	0.893	0.797
We have a system that allows us to recommend higher-priced products to our customers	0.877	0.769
We provide special discounts to valuable customers if they intensify their business with us	0.456	0.208
We have policies and procedures for discontinuing relationships with low-value or problem customers	0.693	0.480
Total (Eigenvalue)	3.317	
% of Variance	55.288	
Cronbach's alpha value	0.832	
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	0.796	
Bartlett's Test of Sphericity	Approx. Chi-Square	264.059
	df	15
	Sig.	0.000

*h2 called communality estimate. It measures the % of variance in an observed variable accounted for by the retained components

Table 6.5: Principal component analysis result for the business environment constructs.

Items	Component	h2
Environmental Dynamism	1	
Our firm is faced with a rapidly changing marketing environment	0.722	0.522
Customers constantly have new requirements in regard to the products and services	0.870	0.758
The demand for products/services and delivery time changes constantly	0.827	0.684
Total (Eigenvalue)	1.963	
% of Variance	65.443	
Cronbach's alpha value	0.733	
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.637
Bartlett's Test of Sphericity	Approx. Chi-Square	70.940
	df	3

	Sig.	0.000
Environmental Competitiveness	1	
Our firm has relatively strong competitors	0.736	0.542
Our firm is in a highly competitive market	0.860	0.739
Price competition is a hallmark of our local market	0.855	0.732
Total (Eigenvalue)	2.013	
% of Variance	67.095	
Cronbach's alpha value	0.752	
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	0.657	
Bartlett's Test of Sphericity	Approx. Chi-Square	77.398
	df	3
	Sig.	0.000
Environmental Complexity	1	
Meeting the customers' needs is complicated	0.871	0.759
The segmentation within major end-user markets is complected	0.876	0.767
Managing the supply chain effectively is complicated	0.815	0.665
Total (Eigenvalue)	2.191	
% of Variance	73.030	
Cronbach's alpha value	0.811	
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	0.703	
Bartlett's Test of Sphericity	Approx. Chi-Square	104.313
	df	3
	Sig.	0.000
Environmental Munificence	1	
The demand for our product in our current market is strong and growing	0.588	0.346
There are abundant resources (i.e., financial, supplies, and human) in our market to support the potential growth of the companies.	0.875	0.765
There is no shortage of necessary resources in our market	0.821	0.675
Total (Eigenvalue)	1.786	
% of Variance	59.524	
Cronbach's alpha value	0.654	
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	0.562	
Bartlett's Test of Sphericity	Approx. Chi-Square	54.999
	df	3
	Sig.	0.000

6.5 Results

Descriptions of the statistical results and results related to the correlations are provided in Table 6.7. Pearson's analysis of the product-moment correlation coefficient between the variables examined in the study was used to test these hypotheses and further explore the relationship

between the variables. The results of the correlations indicate that all business environment structures have significant correlations with organisational performance. It implies a strong link between environmental dynamism, competitiveness, complexity and munificence and organisational performance measures. In absolute values, the correlation between latent variables was between 0.021 and 0.551.

Financial, customer, and internal business process variables were strongly correlated with customer relationship management variables. While learning and growth variables were not. Customer acquisition, regain, and referral activities had the strongest correlation with customer perspective of the organisational performance ($r = 0.552$, $p < 0.01$).

The higher the coefficient of correlation, the stronger the connection between variables (Table 6.6). The highest correlation coefficient was found in the relationships between the customer relationship management activities ($r=0.807$, $p<0.01$). Significant, positive ($r= 0.705$, $p<0.01$) relations between customer perspective and financial perspective of the organisational performance were found.

Table 6.6: Role of thump to correlation effect

Correlation Strength	Dancey and Reidy (2007)	Field (2013)
Perfect	1.0	1.0
Strong	0.7 – 0.9	± 0.5
Moderate	0.4 – 0.6	± 0.3
Weak	0.1 – 0.3	± 0.1

Table 6.8 indicates the relationships between business environment, CRM and organisational performance. Model 1 results show that only environmental munificence has a significant positive relationship with organisational performance's financial measures out of the four environmental dimensions. In addition, customer acquisition, retention, and referral activities were found to be positively correlated with organisational financial performance. It also shows that a complex business environment acts negatively with financial performance but not significantly. In model 2, the same variables (environmental munificence and customer

acquisition, regain and referral activities) with environmental competitiveness have a significant positive link with customers perspective measures of organisational performance. The regressing the internal business process perspective shows a strong positive relationship with all variables except environmental complexity that shows an insignificant negative effect as reported in model 3 in Table 6.8. Finally, model 4 represents the regression relationships between the predictors above and organisational performance's learning and growth perspective. Only environmental dynamism has a significant and positive relationship.

Table 6.7: Descriptive statistics of the variables used in the study.

Construct	Mean	Std. Deviation	1	2	3	4	5	6	7	8	9	10
Environmental Dynamism	3.8812	.72047	1									
Environmental Competitiveness	4.3828	.66897	.499**	1								
Environmental Complexity	3.9274	.79806	.617**	.423**	1							
Environmental Munificence	3.7657	.80214	.390**	.368**	.299**	1						
Customer Acquisition, Regain & Referral Activities	3.2881	.94477	.023	-.082	-.097	.465**	1					
Customer Retention, Cross-and-Upselling & Exit Management Activities	3.0347	.95092	.027	-.073	-.094	.358**	.807**	1				
Financial perspective	3.7401	.67075	.242*	.237*	.061	.507**	.484**	.343**	1			
Customer perspectives	3.8680	.68973	.181	.205*	.021	.486**	.552**	.417**	.705**	1		
Internal business process perspective	3.7010	.72808	.350**	.284**	.122	.551**	.507**	.319**	.644**	.679**	1	
10. Learning and growth perspective	3.9967	.86730	.538**	.328**	.293**	.365**	.118	.033	.474**	.430**	.651**	1

**Correlation is significant at the 0.01 level (2-tailed).

*Correlation is significant at the 0.05 level (2-tailed).

Table 6.8: Regression analysis result between variables and performance measures

	Model 1	Model 2	Model 3	Model 4
Independent Variables	Financial	Customers	Internal Business Proc	Learning and Growth
Environmental Dynamism	.128	.069	.259**	.607***
Environmental Competitiveness	.156	.181*	.165*	.074
Environmental Complexity	-.116	-.104	-.132	-.096
Environmental Munificence	.226*	.188**	.235**	.170
Customer Acquisition, Regain & Referral Activities	.327***	.373***	.451***	.165
Customer Retention, Cross-and-Upselling & Exit Management Activities	-.092	-.054	-.196**	-.170
R	0.614	0.635	0.687	0.580
R ²	0.377	0.404	0.472	0.336
ΔF	9.470***	10.598***	14.024***	7.936***

6.6 Discussion

Modern competitive conditions require organisational performance to be improved via CRM practices. This research aimed to uncover the link between CRM practices, organisational performance, and the business environment. The regression results indicate that hypothesis 1 cannot be rejected entirely. The business environment measures are significantly associated with all the measures of organisational performance. Environmental complexity was found to have negative but insignificant associated with organisational performance. It contradicts the findings of an earlier study by Oyewobi *et al.* (2016) and McArthur and Nystrom (1991), who found significant relationships between subjective and objective performance measures with the above-mentioned variables.

The CRM practises construct was empirically examined, and it was discovered to have a positive impact on organisational performance. Thus, hypothesis 2 can be ac-accepted. The analysis results show that customer relationship management (customer acquisition, regain and referral activities) is significantly associated with organisational performance (financial, customer and internal business process perspectives). As a result, CRM appears to deliver some of the benefits that organizations expect when they invest in CRM practises. However, the magnitude and direction of this relationship's influence were smaller than expected. In other

words, some practises are likely to improve performance while others are unlikely. This study supports the findings of an earlier study that examined deconstructed measures of firm performance in connection with customer relationship management (Mumuni & O'Reilly, 2014). The low or no costs of referral management may contribute to the result. Using customer referral programs often necessitates a company providing positive experiences for its consumers and soliciting and streamlining the referral process. However, customer retention, cross-selling and upselling, as well as exit management, have a significant yet negative relationship with the internal business process.

Based on financial and non-financial variables, these results reveal the relationship between CRM, Business environment, and organisational performance. They show that customers will be more dedicated and loyal if they are valued, and as a result, organisational performance will be improved. Additionally, this study confirms that New Zealand's environmental commitment impacts the performance of organisations in the construction sector. It implies that more resources can contribute to better organisational performance. Furthermore, it will ease the organisation's burden of paying more attention toward conserving the available resources and staying away from illegal actions, which could be costly and negatively impact their performance. These results are consistent with previous findings in different settings, such as those of Eisenhardt and Schoonhoven (1990).

The current study offers theoretical and managerial breakthroughs, as well as suggesting many research applications. The theoretical contribution is to provide an integrative framework to enterprises, which is a substantial development in the current literature of CRM practises and determinants of organisational performance. This study constructs and develops a conceptual model containing features such as CRM and business environment. Even if some of the concepts described in this conceptual model may be familiar to practitioners, its usefulness lies

in its ability to integrate these disparate ideas into a more comprehensive and holistic picture of organisational performance drivers.

This research has several important managerial implications. First and foremost, CRM practises can clearly be utilised to generate valuable customer information that can be used to improve organisational performance. Because traditional marketing methods for enhancing customer retention are expensive, the finest CRM practises provide organizations a potential solution to address this essential issue. In a different business environmental scenario, CRM practitioners will adopt, design, and test integrative techniques. Second, measuring a company's CRM on a regular basis could aid managers in tracking improvements over time. Aside from the model's applicability in the monitoring process, the CRM model's components may help human resource managers build appropriate training programmes that can help increase the staff's grasp of the tasks involved in CRM implementation. Finally, this framework can be used by top management to build relevant and effective marketing plans and methods. Functional managers can also utilise the framework to establish explicit policies that promote CRM as a necessary and important company process rather than a burden on employees.

6.7 Conclusion

This study conducted a quantitative method to evaluate a framework that associated CRM and business environment to organisational performance. The results showed that business environment and customers acquisition, regain, and referral activities are critical determinants of organisational performance. Environmental dynamism, competitiveness and munificence are significantly affecting organisational performance financial and nonfinancial perspectives. Customer Acquisition, regain and referral activities positively and significantly affecting organisational financial, customers and internal business process performance. And a significant negative effect found between customer retention, cross-and-upselling and exit

management activities and internal business process. The impact of CRM activities may differ from the influence on specific components of a composite measure of business performance. In other words, interestingly, the significance of the variables differs based on the measurement of performance. The benefit of the findings to managers is that they must recognise that measuring organisational performance is a very complex construct. As a result, managers should be aware that the interaction between environmental variables and organisational design has varying effects on organisational performance, depending on which performance components are addressed.

The implications of the study for researchers and practitioners were discussed in a variety of ways. The analysis provided a foundation for future researchers interested in exploring the causes of organisations' performance heterogeneity in the construction industry. This also has implications for construction management and practitioners when designing their work environment and customer relationship activities to achieve superior results.

Nonetheless, the findings have limitations that could reduce the generalisability of the results. The first point to mention is that CRM processes change over time, and businesses may be at different stages of CRM deployment at different times. As a result, the organisations in the study's sample were likely in different stages of their CRM development when the researchers conducted the cross-sectional study. Second, while the independent variables explain a significant variation in organisational performance, future research may include additional items in measuring organisational performance. It should consider efficiency variables, such as cost reductions in production, and effectiveness variables, such as the launch of new products, as components of organisational success. Third, despite the theoretical backing and empirical validity of the variables and constructs used, the analysis provides no guarantee that

the measures used are faultless. Finally, the results' generalisability could be limited due to sample size limitations, as a larger sample may have provided for more practical conclusions.

6.8 Epilogue

This chapter was performed to study the relationships between business environment, CRM and organisational performance in the New Zealand construction industry. It employed regression method to analyse these relationships. This chapter designed to address the study third objective as stated in Chapter 1. The following chapter will study the interrelationships between the main determinants and organisational performance in the New Zealand construction industry using PLS-SEM.

Chapter 7 PARTIAL LEAST SQUARES STRUCTURAL EQUATION MODELLING OF ORGANISATIONAL PERFORMANCE DETERMINANTS

This chapter is extracted from:

- Alqudah, H, E., Poshdar M., Rotimi, J. O. B., Oyewobi, L., & Tookey, J. (2021). Determinants of organisational performance: PLS-SEM approach towards New Zealand construction organisations.

7.1 Prologue

Organisational performance differences have been linked to a variety of different characteristics in the literature. Differential performance and how it affects an organisation's profitability are investigated using the interrelationships between these factors. Therefore, the primary purpose of this chapter is to investigate the interrelationships among several variables, including organisational characteristics, customer relationship management, competitive strategies, work environment, resources and capabilities and performance, using a questionnaire of 101 construction firms in the New Zealand construction industry. The interrelationships between the variables were studied using the partial least square route analytic technique. The data indicate that competitive strategies impact organisational performance considerably and positively. Successful organisations are those that blend sustained characteristics and strategy throughout time. As a result, the combination is helping organisations perform better. The study's findings suggest that construction managers should focus on the characteristics mentioned above as gaining competitive advantage and sustainable organisational performance.

7.2 Introduction

Similar companies within the same sector outperform each other. The mainstream strategic management study seeks to uncover the origins of performance disparities theoretically and empirically (Hawawini *et al.*, 2003). A lot of researchers have added to this field (Oyewobi *et al.*, 2019). Competitive strategies, work environment, and organisational characteristics are the main factors that explain variability in companies' short- and long-term success (Lenz, 1981). According to Barney (2014) and Teece (2007), organisational resources and capabilities are the main reasons for performance differentials, and they provide competitive advantages. Ang and Buttle (2006) argued that customer relationship management (CRM) substantially affects business performance. According to Syverson (2011), management methods, people and financial capital, and variations in competitive regimes create organisational success and competitive disparities.

The construction industry's environment has been marked by intense competition and significant volatility (Tan *et al.*, 2012; Kale & Ardit, 2003). As a result, research is being conducted to examine construction organisations' competitive strategies, resources and capabilities, customer relationship management, and organisational factors that contribute to their ability to perform at the desired level in a variety of business environments (Lansley, 1987; Chew *et al.*, 2008; Tan *et al.*, 2012; Mumuni & O'Reilly, 2014).

Numerous theories in the field of strategic management have attempted to explain performance differentials. The two most prevalent concepts in strategic planning research continue to be an industrial organisation (IO) and a resource-based view (RBV). These theories provide disjunctive explanations for the persistence of performance differences (O'Cass & Weerawardena, 2010). According to IO, the external environment of an organisation is

determined by the industry's structure. On the other hand, RBV thinks that an organisation's internal environment is a critical factor in determining its competitive edge.

Despite the known relationship between distinct variables and organisation performance in strategic hypotheses, little research has been dedicated to studying the connection of these relationships in construction firms (Spanos *et al.*, 2004; Oyewobi *et al.*, 2016). By employing cross-sectional data on five significant determinants identified by the literature (Figure 7.1) this research aims to provide conceptual insight into the effect of heterogeneity in organisational performance. In the construction environment, it is still unclear how these variables interact to produce higher performance.

7.3 Modelling and Hypotheses Development for Organisational Performance

To explain organisational performance, the conceptual framework shown in Figure 7.1 includes five components. The model is conceptualised in the study using the following aspects:

- Utilises critical organisational characteristics.
- Effectively distributes resources via effective capabilities under the appropriate environmental circumstances.
- Follows a suitable strategy and handles their customer relationships appropriately.

With these qualities, the organisation may achieve a sustained competitive advantage and better performance. These variables are explained further in the following sections.

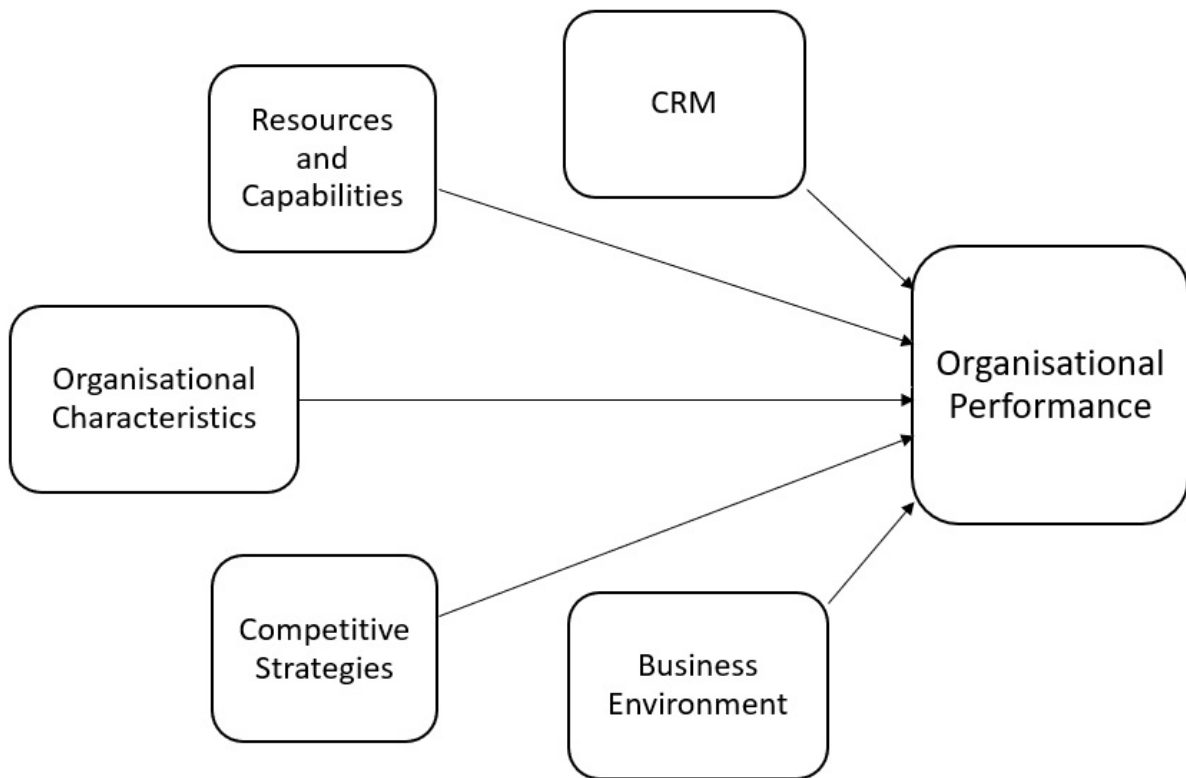


Figure 7.1: Conceptual framework

7.3.1 *Competitive Strategies and Organisational Performance*

Competitive strategies include a series of planned and linked actions designed to provide businesses with a competitive advantage. Porter's (1980, 1985) comprehensive categorisation of competitive strategies inspired the concept of competitive strategies: *Cost leadership strategy* – increases profitability via cost reduction; *differentiation strategy* – provides a product or service that is considered as distinctive in the industry; *focus* on outperforming competitors in an industry – concentrates on a limited market or market segment.

Porter (1980) asserts that an organisation needs to use these fundamental strategies in order to get a competitive advantage or improved performance. Several studies on the nexus between strategy and performance have yielded inconclusive results (Nandakumar *et al.*, 2010). Miller and Cardinal (1994) checked 26 studies that had explored the relationship between strategy and organisational performance. They concluded that strategy had a significant impact on

performance. Additionally, the researchers' methodologies explain their results' inconsistencies. Furthermore, construction management researchers have shown the value of these strategies.

Kale and Ardit (2003) investigated the relationship between competitive strategy, environmental factors, and organisational performance. According to neo-institutional academics' assertions, their sample included 500 United State contractors. The findings indicated that a variety of strategies were positively associated with performance. In another study, Oyewobi *et al.* (2017) discovered that when generic strategies are used, a competitive environment has a significant effect on organisations' performance.

Henderson and Mitchell (1997) argue that business strategy is one of the factors that shape an organisation and performance at different levels of analysis. At the same time, the connection between strategy and performance affects both organisational capacities and competitive situations. However, it is still unclear what business strategies are being utilised by construction companies located in New Zealand to attain better performance or that guarantee their ongoing survival in the sector. Empirical research explicitly connecting to competitive strategies to explain organisational performance is rare, particularly in the New Zealand construction industry. This research examines the connection between these variables. As a consequence, the study hypothesises:

H1: Competitive strategies are directly\indirectly related to organisational performance

7.3.2 Organisational Characteristics and Organisational Performance

Numerous organisations, particularly in the construction industry, rely significantly on people and projects to drive decision making. According to Giritli and Oraz (2004) organisational characteristics are those that result from the management style selected by the organisation via

its structure and the company culture shown by its employees and their interactions with management. This research adheres to Lansley's (1987) classification of organisational characteristics. He classified the characteristics into three categories: *organisational structure*, *management style*, and *decision-making style*.

Efforts in research have demonstrated that *organisational structure* has a significant influence on performance, but the results varied in terms of whether the effect is direct or indirect (Pertusa-Ortega *et al.*, 2008).

Management style can be determined by the industry's characteristics and environment. The construction organisations are project-based, which offers distinct characteristics (Giritli & Oraz, 2004). Lansley (1994) asserts that variety of the management methods deemed most successful in other sectors may differ in the construction environment due to its unique characteristics. As a result, in order to appreciate the value of management style to the company, it is necessary to analyse the nature, characteristics, and surroundings that distinguish the construction sector from all other sectors. Even yet, various projects may call for different management styles. According to Naum (2001), in a complex decision-making environment, a participative management style with a bureaucratic structure is preferable. On the contrary, Nicholas (1990) believes that a directed style produces superior results when there is a time constraint, such as the construction. The academic literature has paid considerable attention to the relationship between performance, strategy, and decision-making style (Porter, 1980; Russ *et al.*, 1995; Albaum *et al.*, 1995).

Porter (1980) linked the overall *decision-making style* chosen by an organisation to the availability of resources on top of management or problem-solving abilities. Because decision makers are problem solvers in businesses (Russ *et al.*, 1995), this research uses the terms "problem-solving abilities" and "decision-making styles" interchangeably. According to

Govindarajan (1989), the decision-making style is one of the management qualities that links with company's performance. Lansley (1994) argues that problem-solving methods influence organisational success. However, there is a need to comprehend the function of the organisation's structure in determining the performance. The gap in the knowledge of the connections in the literature previously is that there are rare empirical studies that look holistically at how these independent variables affect performance.

In light of the foregoing, the study hypothesises the following:

H2: Organisational characteristics are directly\indirectly related to organisational performance.

7.3.3 Resources and Capabilities and Organisational Performance

Superior organisational performance relies on creating a unique range of resources and their abilities to be used in a well-conceived plan (Collis & Montgomery, 2008). According to Li and Ling (2012), when intense competition starts to have a meaningful impact on companies, emphasis will be shifted from the exterior to the internal capabilities. In such circumstances, successful strategies must be supported by critical organisational distinctive talents and competencies. These strategies are successfully used to attain better performance (Prahalad & Hamel, 1990).

Chew et al. (2008) classify an organisation's resources into five categories: physical, financial, administrative, human, and technological. Additionally, Barney (1991) defined capital resources as the structure of an organisation's reporting, formal and informal self-improvement, regulating and coordination systems, and data management inside and between organisations, including those in its immediate environment. Organisational capabilities must be considered

primarily in terms of the organisational or management characteristics or processes used to allocate resources to encourage productive work (Teece *et al.*, 1997).

According to Pertusa-Ortega *et al.* (2010), organisational characteristics should be regarded as a meta-capability or meta-resources. Organisational characteristics is referred to as a higher-order asset or capacity whose appropriateness is determined by the organisation's resources and capabilities, which must be integrated and organised effectively in order to create competitive advantage and exceptional performance (Newbert, 2008). Resources and capabilities provide management with a variety of decision-making options for achieving sustainable competitive advantage (Winter, 2003). To bolster these points of view, this study hypothesises the following:

H3: Resources and capabilities are directly\indirectly related to organisational performance

7.3.4 Business Environment and Organisational Performance

The environment has been recognised as a critical element in understanding organisational performance by organisational theory and strategic management. It has been shown in previous studies (Galbraith, 1973; Thompson, 1967). Globally, construction organisations must be able to react to changes in the construction business environment (Enhassi *et al.*, 2009). The environment's structure characterised the effect and nature of environmental changes (Ting *et al.*, 2012). The changes create uncertainty (Dansoh, 2005). The incapability of companies to respond to environmental uncertainty may impede their survival in the volatile commercial environment of construction. This is because the industry operates in the same business environment and is subjected to the same kind of unpredictable circumstances that impact other industries (Dansoh, 2005). It is the environment that provides organisations the support they

need to survive. There is no consensus on environmental dimensions that may be used to depict the business environment (Dess & Rasheed, 1991; Oyewobi *et al.*, 2017).

Tung (1979) describes environmental dimensions as the features and aspects which affect the focal units. Dess and Beard (1984) propose three aspects of the business environment: *munificence*, *complexity*, and *dynamism*.

- The term "*munificence*" refers to the calibre of environmental influences. It refers to the availability of essential resources from the environment to support the development and stability of the organisation.
- *Dynamism* is defined as the unexpected changes in the environment. A dynamic environment has an effect on the organisation's performance (Fayzollahi *et al.*, 2013). Given the complexity of the connection between environmental dynamic and organisational performance, it is conceivable to argue that differences in the outcomes obtained by businesses in terms of qualitative usage are strongly affected by their environmental dynamism (Peteraf *et al.*, 2013).
- *Complexity* refers to the concentration of heterogeneous environmental elements (Dess & Beard, 1984).

This research accepts these three dimensions while adds intensity of competition as the fourth environmental factor, following Windapo and Cattell (2013). *Competitive intensity* refers to a situation in which a company works in markets with a high number of rival organisations, restricting its potential development possibilities (Auh & Menguc, 2005; Windapo & Cattell, 2013).

Environmental munificence exhibits either a positive linear relationship with organisational performance or an inverted u-shaped one. This is because a high degree of munificence shields

organisations from environmental stresses because it provides financial and operational slack that can promote organisational stability and development if used effectively (Cyert & March, 1963). It is imaginable, however, that organisations may have "too much of a good thing". Organisational slack can be bad for efficiency because it causes managers to become complacent about effectively tracking performance enhancement. Relatively minor issues left unattended may contribute to more severe problems in the organisation and the atmosphere that can adversely affect the quality of life. It lends itself to the broken window hypothesis. Alternatively, it causes them to become overconfident in their ability to offer more and better services.

Environment complexity has a direct relationship with organisational performance because a construction organisation works through an extensive range of geographical areas in a dispersed environment. Even so, it is possible that a diverse customer base enables organisations to modify the services they provide to the customers' requirements more effectively.

Organisational performance changes because of the dynamic environment (Fayzollahi *et al.*, 2013). Organisations usually need greater human and financial resources to deal efficiently with environmental turbulence and instability (Dutton *et al.*, 1983). Nevertheless, it is conceivable that demonstrating increased sensitivity to an organisation's external constraints will sharpen managerial reflexes and trigger enhanced creativity, thus, producing better organisational performance.

As a result, the following research hypothesis is proposed:

H4: The business environment has a direct and indirect interaction with organisational performance.

7.3.5 CRM and Organisational Performance

CRM is concerned with maximising shareholder value via the establishment of appropriate relationships with key customers and customer groups (Mumuni & O'Reilly, 2014). CRM initiatives are intended to benefit both the company and the customer and are predicated on the idea that CRM activities may help organisations operate better (Boulding *et al.*, 2005; Osarenkhoe, 2006). Improving the connection "requires less marketing and traditional brand-related activities and more process development to enhance the customer experience" (Frow & Payne, 2007). CRM maximises the potential of relationship marketing methods and information technology by expanding the ways in which data and information can be used to discover and co-create value for customers. Regardless, Payne and Frow's (2005) report states that CRM "needs cross-functional system integration, people, activities, and marketing skills that are supported by information, technology, and applications."

CRM, from a performance perspective, includes a method of obtaining, keeping, and engaging with customers and the activities that may be performed as part of this process (Frow & Payne, 2007, 2005; Verhoef & Langerak, 2002). Reinartz *et al.* (2004) linked CRM procedures and actions to three fundamental customer-facing levels: relationship initiation, maintenance, and termination. At the relationship initiation stage, the primary responsibilities are gaining new customers (acquisition activities), recapturing lost customers (customer regain activities), and executing the required customer analysis to support these two activities. The relationship's maintenance stage defines consumer retention, cross-selling and up-selling, and referral management activities. These three tasks are again supported by detailed consumer research (maintenance analysis). Finally, the termination process takes care of customer exit management as well as the necessary analytics.

Given CRM's role in delivering value to both customers and organisations, it is unsurprising that practitioners and theoretical researchers are interested in the impact of CRM adoption on organisational performance (Ang & Buttle, 2006). However, the conclusion about CRM's impact on organisational performance is still debatable. Numerous industry studies conducted in the decade before 2010—by the Gartner Group, Butler Group, and AMR Study—found that CRM project success rates were as low as 30% in some circumstances. Numerous academic studies have been conducted to determine the effect of CRM on organisational performance (Ang & Buttle, 2006; Camarero-Izquierdo *et al.*, 2005). Several other academic studies, on the other hand, have demonstrated that CRM has a significant impact on performance, including increased consumer awareness (Mithas *et al.*, 2005), superior customer retention (Jayachandran *et al.*, 2005), and increased customer satisfaction (Srinivasan & Moorman, 2005).

While these studies focused on the impact of CRM on customer-related factors, Reinartz *et al.* (2004) used a more holistic strategic approach across organisations. They investigated the effect of CRM on a composite metric of market share, revenue, profitability, and overall organisational performance. They found that CRM adoption is associated with improved performance in the relationship initiation and maintenance stages, with the relationship maintenance stage having the greatest impact. Additionally, they discovered strong correlations between CRM-compatible organisational alignment and relationship discontinuation and initiation, suggesting that businesses that use incentives and programmes to promote CRM-compatible behaviour are more likely to improve performance. As a result, a considerable body of empirical academic research supports the idea that investing in and implementing effective CRM systems has a significant impact on business performance. On the basis of the above, the research hypothesises that:

H5: CRM directly\indirectly affects organisational performance

7.3.6 Interaction Between Organisational Characteristics, Strategies, Environment, Resources/Capacities, CRM, and Performance

Numerous studies have been performed to examine the link between organisational structure and performance, as well as the relationships between strategy, structure, and performance, considering environmental factors (Oyewobi *et al.*, 2019; Nandakumar *et al.*, 2010). However, few empirical studies in scientific research have been performed to examine the effect of organisational characteristics on the relationship between strategy, organisational performance, and the environmental variables that affect this fit. According to Hunger and Wheelen (2011), achieving an optimal strategic fit between an organisation's corporate environment, competitive strategies, structure, and procedures has a substantial positive effect on the organisational performance. As the business environment grows more dynamic and complex, the need of establishing a competitive strategy becomes more vital. Businesses that adapt their business strategy and structure to the enormous breadth and volatility of the environment may outperform their competitors (Pertusa-Ortega *et al.*, 2010).

These findings support the contingency theory that organisational contexts impose restrictions on organisations and those organisations must achieve strategic fit by modifying their structure to accommodate these constraints (Wilden *et al.*, 2013). This theory categorises organisational characteristics as either endogenous (such as management style, decision-making style, and organisational structure) or exogenous (such as environmental dynamism, complexity, competitiveness, and munificence). Accordingly, it implies that organisations achieve superior performance by balancing internal organisational characteristics and external factors (Wilden *et al.*, 2013). Additionally, the contingency theory asserts that organisational performance is contingent upon the organisation's realignment with its environment and on the coherence of

organisational components with one another. No one strategy is deemed ideal for every organisation, regardless of its infrastructure or environment (Chung *et al.*, 2012; Wilden *et al.*, 2013). Several studies have been published on this topic. However, it is unknown to what extent construction organisation improves their performance by creating strategic alignment with their business environment via their strategies, CRM, and characteristics. Consequently, this research examines the following hypothesis:

H6: A superior organisational performance can be achieved by obtaining strategic fit with the business environment, organisational characteristics, and resources/capability where the relationship with their customers is properly managed.

7.4 Research Methods

This research investigated the causes of organisational performance differentials in the New Zealand construction sector. The study's quantitative approach was based on a comprehensive evaluation of the literature. A questionnaire was developed to collect data. The questionnaire was split into seven parts, the first of which addressed the respondents' demographics. The following five sections covered questions about the determinants identified through an extensive review of the literature, including their organisation's characteristics, the competitive strategies adopted, organisational resources and capabilities, business environments, and the CRM embraced by their organisations. The final part examined their perception of their organisational performance in comparison to their rivals. The study verified the validity of the questionnaire contents by modifying certain previously validated measurement items and sending a preliminary draft to nine field experts (Pertusa-Ortega *et al.*, 2008).

For sampling purposes, the complete list of the construction organisations operating in New Zealand was acquired. From 65,320 registered companies (Stats NZ, 2019), 320 samples were

selected using a simple random sampling technique. The sample size (320) was determined using Ankara's (2007) method.

$$ss = \frac{z^2 p(1 - p)}{c^2}$$

Where: ss (sample size), z (standardised variable), P (percentage picking a choice, expressed as a decimal), and c (confidence interval, expressed as a decimal).

A questionnaire was sent to the Chief Executive Officers, Directors, or professionals with an extensive knowledge of the strategic objectives of construction organisations. Each organisation selected their suitable representative. Invitations and information were sent to the sampled participants via email, along with a link to a Qualtrics online survey questionnaire. By the end of the survey period, 101 (~30%) of the sample answered, which served as the foundation for the study's analysis. This response rate is considered adequate for generalising the results in construction management research (Kale & Ardit, 2003; Tan *et al.*, 2012).

7.4.1 Research Measures and Constructs

As shown in Figure 7.1, the primary components of this empirical study include organisational characteristics, business environment, organisational resources and capabilities, competitive strategies, CRM, and organisational performance.

Porter's (1980) generic strategies were employed to evaluate *competitive strategies*. This finding is consistent with previous studies (Oyewobi *et al.*, 2017; Nandakumar *et al.*, 2010). The study used previously validated measurement scales, and respondents were asked to indicate the degree of emphasis placed on each of the 11 categories (differentiation – 4; cost-leadership – 4; and focus – 3), as shown in Table 7.1.

The study examined *organisational characteristics* using decision-making style, organisational structure, and management style. Four questions were used to measure management style, three for organisational structure, and four for decision-making style (Table 7.1). The scales were adapted from Lansley (1987), Russ *et al.* (1995), and Amzat and Idris (2012). Respondents were asked to assess the effect of these characteristics on the functioning of their organisation. Financial, human, and technological resources were analysed to determine a company's *resources and capabilities*. These measurement scales follow Rush *et al.* (2007). Four items were used to assess financial resources, five were used to assess technical resources, and four were used to assess human resources (Table 7.1). Respondents were asked to assess the extent to which these resources affected their organisation's operations.

The dimensions of the environment are employed to measure the *business environment*. As stated, they were assessed using notions such as dynamism, munificence, complexity, and competitive intensity. The measurement items for these dimensions were adapted from earlier studies (Auh & Menguc, 2005; Kabadayi *et al.*, 2007; Nandakumar *et al.*, 2010; Oyewobi *et al.*, 2019). The research evaluated munificence environment, environmental complexity, competitive intensity and dynamic environment using three items each (Table 7.1). Respondents were asked to report any changes in their work settings and the effect of the factors. The customers' acquisition, regain and retention activities, and cross-and-upselling, customer referral and exit management activities, are the *CRM* processes and actions (Table 7.1). The items of measurement for such dimensions were derived from prior research (Mumuni & O'Reily, 2014). The responders were asked to indicate the level of correlation on each of the ten items.

Finally, the *performance* of the organisation was evaluated using both financial and non-financial indicators. This research used a balanced scorecard (BSC) as a method to evaluate

organisational performance. The BSC integrated conventional financial measures with non-financial measures spread over three different perspectives. The BSC allows managers to look at the company from four critical views: customer perspective, internal perspective, learning and growth perspective and financial perspective. It evaluates financial and consumer perspectives using four items, learning and growth using three items and internal business process using five items as listed in Table 7.1 (Kaplan & Norton, 1996). The respondents were asked to evaluate the measure levels using a five-point Likert scale.

The composite reliability of all relevant items measuring the dimensions (reflection indicators) of each variable was determined using confirmatory factor analysis. Following Hulland's (1999) statement that loading factors of 0.4 or more are appropriate in exploratory research projects, including hypothesis testing, all components with a loading factor greater than 0.4 were retained. When an indicator has a low weight and outer loadings are less than 0.50, the decision to keep or remove the indicator must be made mainly on the basis of its theoretical significance and degree of overlap with other indicators within the same variable (Hair *et al.*, 2012). The construction industry is project-based by nature, in which a large number of organisations or individuals are involved temporarily. Additionally, the sector often exhibits specific distinguishing characteristics, such as the bidding process, business agreements, project characteristics, and business environmental aspects. These characteristics that set the industry apart from other sectors must be understood; therefore, the indicators are retained (Giritli & Oraz, 2004; NRC, 2009). Accordingly, mean values for each variable were computed using the retained items.

Table 7.1: Factor loading for study variables and its measurement items

Variables	Dimensions	Items	Factor Loading
Competitive strategies	Differentiation Strategy	• Achieving high quality in the constructed facility and beyond the requirements in the specifications	0.579
			0.441

		• Being highly responsive to clients' requests	0.459
		• Achieving on schedule performance in construction operations and delivering constructed facilities	0.465
		• Introducing innovative financing methods	
	Cost leadership Strategy	• Emphasis on production capacity utilisation	0.667
		• Emphasis on operating efficiency (e.g., productivity in production)	0.583
		• Emphasis on finding ways to reduce costs	0.569
		• Emphasis on price competition	0.478
	Focus Strategy	• Targeting a specific segment (e.g., emphasising a provincial region or a specific group of consumers)	0.451
		• Offering unique products (e.g., unique function or design)	0.796
		• Offering products suitable for a high price segment	0.655
Organisational characteristics	Organisational Structure	• Management controls how individual employee works, or activities are spelled out.	0.340
		• Managers ensure integration & coordination of individual employee activities and align them to the company's strategies	0.694
		• The nature of the organisational structure encourages improving the strategy and delegation of authorities	0.619
	Management Style	• Management makes decisions in the best interest of employee after consultation	0.713
		• Employees and Managers present ideas, ask questions, listen, and provide feedback.	0.644
		• Management recognises and rewards efficiency, excellence, openness, social skill, and contribution to decisions	0.687
		• Employees tend to more committed to goals when the management sets them	0.493
	Decision-Making Style	• Managers encourage employees to focus on the key techniques, show independence and initiative in solving a problem (directive)	0.669
		• Management encourages analytic ideas and welcomes an alternative approach to the problem solving (analytical)	0.730
		• Managers strengthen creativity and encourage independent action (conceptual)	0.740
		• Managers are aware of the socio-cultural attitudes of the employee, and they are being guided towards meaningful problem-solving strategies to create an enabling environment (Behavioural)	0.559
Resources and capabilities	Financial Resources	• Ability to use the company's fund/finance to finance construction works	0.567
		• Ability to get equity-selling part of the company	0.587
			0.768

		• Ability to secure debt or loan to fund expansion, improve profit ratio and improve cash-on-cash returns •	0.532
	Human Resources	• Strengthen the procedures for recruitment, training & promoting all levels of employees • Enhance reward programme for motivating and challenging employees • Development of organisation capabilities through the participation of top managers & technical personnel in professional development • Reduce absenteeism and maintain moderate staff turnover	0.700 0.712 0.505 0.555
	Technological Resources	• Effectively assess technological opportunities and threats • The company's R&D ensures allocation of resources efficiently • Encourage creativity and innovation • Technology is important for the company's market share as well as the quality of equipment. • The company is efficient in integrating the new technology into the business system and process	0.674 0.752 0.579 0.759 0.786
Business Environments	Environmental Munificence	• The demand for our product in our current market is strong and growing • There are abundant resources (i.e., financial, supplies, and human) in our market to support the potential growth of the companies • There is no shortage of necessary resources in our market	0.346 0.765 0.675
	Environmental Dynamism	• Our firm is faced with a rapidly changing marketing environment • Customers constantly have new requirements regarding the products and services • The demand for products/services and delivery time changes constantly	0.522 0.758 0.684
	Environmental Complexity	• Meeting the customers' needs is complicated • The segmentation within major end-user markets is complicated • Managing the supply chain effectively is complicated	0.759 0.767 0.665
	Environmental Competitiveness	• Our firm has relatively strong competitors • Our firm is in a highly competitive market • Price competition is a hallmark of our local market	0.542 0.739 0.732

CRM	Customer Acquisition, Regain Referral Activities &	• We differentiate our customer attracting efforts based on customer value	0.554
		• We have a systematic process for trying to regain the valued past customers	0.557
		• We provide current customers with incentives for referring to new potential customers	0.676
		• We try to manage the customer referral process actively	0.668
	Retention, Cross-and-Upselling & Exit Management Activities	• We maintain regular interactive communications with our customers	0.444
		• We have customer loyalty or retention programmes	0.620
		• We have a system that allows us to recommend different products/services to customers based on their previous demand	0.797
			0.769
		• We have a system that allows us to recommend higher-priced products to our customers	0.208
		• We provide special discounts to valuable customers if they intensify their business with us	0.480
		• We have policies and procedures for discontinuing relationships with low-value or problem customers	
Organisational Performance	Financial	• Accelerate revenue growth	.856
		• Increase return on investment	.825
		• Increase profitability	.722
		• Control total cost	.752
	Customers	• Increase market share	.841
		• Increase customer acquisition/ Attract new customers	.891
		• Increase customer satisfaction/Meet customers' needs	.612
		• Increase customer retention/loyalty/Repeat business	.695
	Internal Business Process	• Reduce order cycle time	.788
		• Meet contract schedule/Meet time standards	.785
		• Lower cost of existing process	.755
		• Improve quality standards	.756
		• Speed up new product in comparison to competitors/Technology	.679
	Learning and Growth	• High employee satisfaction	.868
		• High employee retention	.866

7.4.2 Methods of Data Analysis

The research evaluates the hypothesised model shown in Figure 7.1 using the partial least squares structural equation modelling (PLS-SEM) technique. Rigdon (1998) asserts that structural equation modelling (SEM) evolved out of verifying comprehensive theory and notions. PLS-SEM assesses entire theories, concepts, and complicated models (Chin, 2010; Robins, 2012). PLS-SEM is considered suitable for strategic management research since it enables the development and refinement of ideas and theories (Robins, 2012).

PLS is a variance-based path modelling technique (Hair *et al.*, 2011). Due to its variance-based nature, PLS-SEM is especially well-suited for exploratory research (Hair *et al.*, 2014). PLS-SEM relaxes assumptions about the distribution, allows the use of smaller sample sizes (while maintaining a high degree of statistical prediction power), and permits the formative measurement of variables. The SmartPLS software package was utilised to implement this research.

7.5 Research Analysis and Findings

The path model generated using the PLS-SEM method is shown in Figure 7.2. Two exogenous (independent) variables and four endogenous (dependent) variables are connected in the model. Exogenous variable variation is explicated by one or more model variables (Llera, 2005). The study used the term *outer model* to indicate dimensions as it measures each variable. And the term *inner model* for the main variables (dependents and independents). As proposed by Gudergan *et al.*, (2008) the outer model was built reflectively. The computed variables serve as *reflecting indicators* for the constructs. A reflecting indicator is a group of potential items

inside the conceptual sphere linked to the construct through factor loadings. They demonstrate the construct-indicator bivariate connection (Hair *et al.*, 2014).

7.5.1 Measurement Model Evaluation

According to Hair *et al.* (2014), after establishing the inner and outer models, the PLS algorithm will determine the reliability and validity of the outer model's constructs. This research examined convergent validity initially to evaluate the reflective outer models. Convergent validity was determined using loading factor, composite reliability (CR), and average variance extracted (AVE). As seen in Table 7.2, the loadings of all items surpassed the suggested threshold of 0.6. (Chin *et al.*, 2013). PLS CR is preferred to Cronbach's alpha values as a measure of internal consistency because it offers a more accurate measurement (Hair *et al.*, 2014). Composite reliability enables PLS-SEM to deal with the reliabilities of several reflective indicators without misrepresenting them. It does so by removing the assumption that all interpreting data in the population are equal (Hair *et al.*, 2014). Consequently, rather than the alpha value, composite reliability is chosen. Composite reliability scores, which indicate how effectively construct indicators indicate the latent construct, were more than the required value of 0.7. The AVE, representing the overall variation in the indicator explained by the latent construct, exceeded the required value of 0.5 (Hair *et al.*, 2013).

Afterwards, discriminant validity was evaluated. While convergent validity refers to the extent to which several items measuring the same construct converge, discriminant validity was evaluated by comparing the total squared correlation across constructs as well as the extracted variance for the same construct (Chin *et al.*, 2013). According to Table 7.3, the numerator of the AVE (diagonal values) for each construct is greater than the correlation coefficient for that construct, indicating acceptable discriminant validity (Fornell & Larcker, 1981). Recent criticisms of Fornell and Larcker's (1981) criteria suggest that they may be incapable of reliably

identifying a lack of discriminant validity in regular research settings (Henseler *et al.*, 2015). Henseler *et al.* (2015) proposed novel criteria for assessing discriminant validity based on the framework combination matrix: the heterotrait-monotrait (HTMT) correlation ratio. This novel approach was used to test discriminant validity, and the findings are reported in Table 7.4.

Table 7.2: Validity and reliability of the constructs.

Constructs	Item	Loadings	T-Value	AVE	CR	CA
Organisational Characteristics	Decision Making Style	0.877	29.580**	0.725	0.887	0.809
	Management Style	0.891	25.655**			
	Organisational Structure	0.783	10.888**			
Competitive Strategy	Cost Leadership Strategy	0.782	13.702**	0.663	0.854	0.744
	Differentiation strategy	0.900	42.570**			
	Focus Strategy	0.753	13.743**			
Resources and Capabilities	Financial Resources	0.830	21.035**	0.687	0.868	0.773
	Human Resources	0.863	24.611**			
	Technological Resources	0.794	17.240**			
Environmental Factors	Environmental Competitiveness	0.722	7.682**	0.555	0.833	0.753
	Environmental Complexity	0.665	5.384**			
	Environmental Dynamism	0.785	8.775**			
	Environmental Munificence	0.800	18.060**			
CRM	Acquisition, Regain and Referral management activities.	0.962	113.574**	0.921	0.959	0.914
	Retention, Cross-and-Upselling & Exit Management Activities	0.957	97.875**			
	Customer	0.846	24.262**			
Organisational Performance	Financial	0.843	25.653**	0.700	0.903	0.856
	Internal Business Process	0.894	31.259**			
	Learning and Growth	0.759	10.592**			

Average variance extracted (AVE); Cronbach's alpha (CA); Composite reliability (CR); Critical T-Values *1.96 (P < 0.05); **2.58 (P < 0.01)

Table 7.3: Discriminant validity.

	CRM	CS	ENV	OP	OC	RnC
CRM	0.959					
Competitive Strategy (CS)	0.414	0.814				
Environment (ENV)	0.193	0.513	0.745			
Organisational Performance (OP)	0.451	0.669	0.538	0.837		
Organisational Characteristics (OC)	0.121	0.688	0.484	0.487	0.852	
Resources and Capabilities (RnC)	0.34	0.669	0.511	0.632	0.636	0.829

Values on the diagonal (bolded) are the square root of the AVE, while the off diagonals are correlations

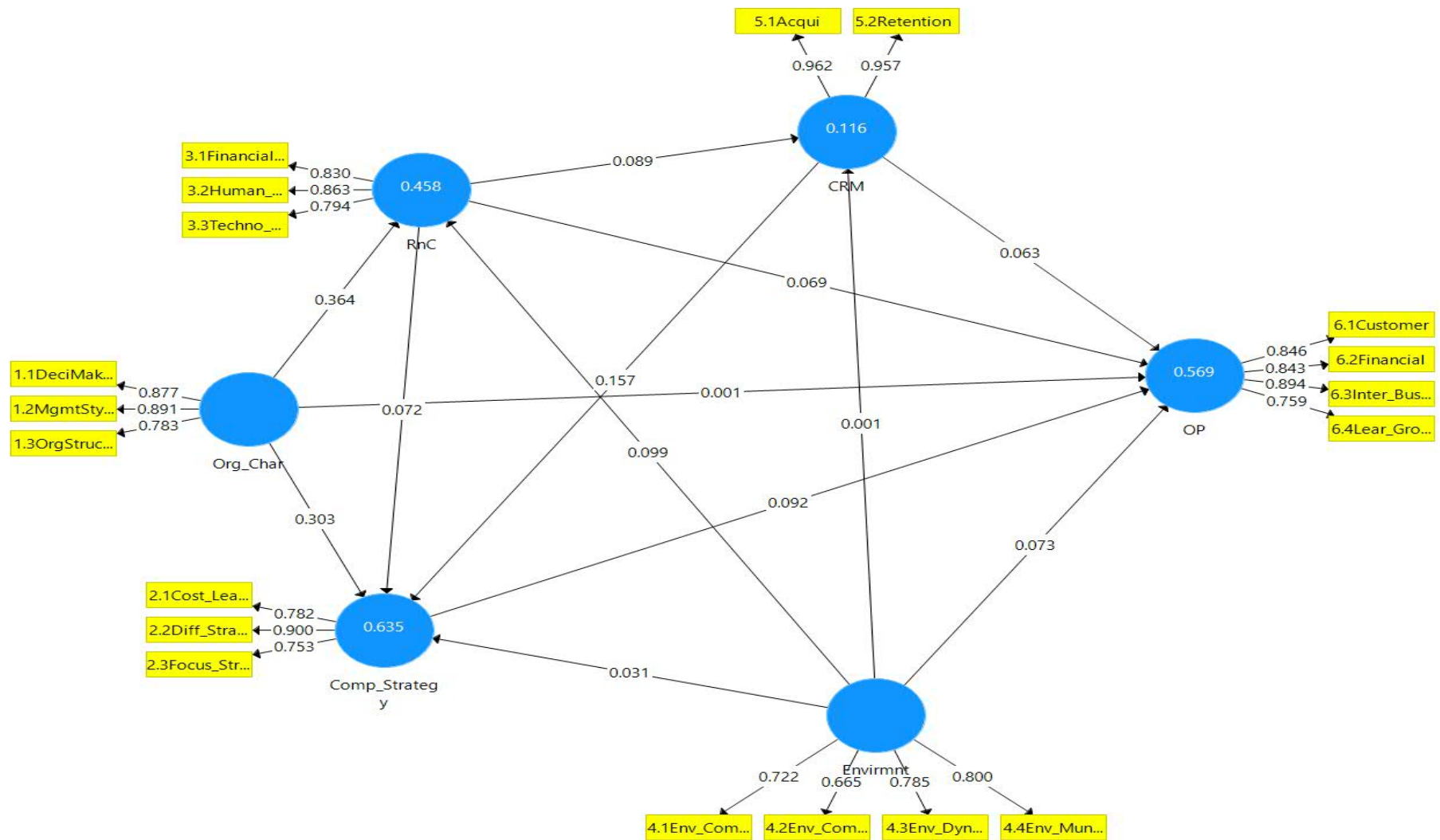


Figure 7.2: Result of factor analysis

Table 7.4: Heterotrait-monotrait (HTMT).

	CRM	CS	ENV	OP	OC	RnC
CRM						
Competitive Strategy (CS)	0.504					
Environment (ENV)	0.263	0.611				
Organisational Performance (OP)	0.504	0.837	0.586			
Organisational Characteristics (OC)	0.14	0.874	0.617	0.583		
Resources and Capabilities (RnC)	0.413	0.871	0.619	0.773	0.791	

Shaded boxes are the standard reporting format for the HTMT procedure.

7.5.2 Structural Model Evaluation

As a rule of thumb, the study reviewed collinearity to confirm the correlation between the indicators before conducting the model analysis. The test revealed that the variance inflation factor (VIF) values were less than five, and the tolerance values were higher than 0.2. This was interpreted to mean no collinearity issues with the indicators, as Hair *et al.* (2011) proposed. Following validation of the outer model's validity and reliability, the following procedures were used to evaluate the hypothesised relationships inside the inner model while evaluating the structural model.

Hair *et al.* (2013) suggested evaluating the structural model by analysing the R^2 , Beta (β), and corresponding T-values using a bootstrapping method with a 5000 resample. In addition to these fundamental criteria, researchers should also consider predictive relevance (Q^2) and effect size (f^2). R^2 is a powerful tool for evaluating the quality of a PLS model since it quantifies the model's predictive capability (Hair *et al.*, 2014). Chin (1998) proposed that R^2 values of 0.19, 0.33, or 0.67 for endogenous latent variables in the inner model are acceptable, indicating a low, moderate, or significant predictive capacity, respectively. By contrast, Cohen (1988) said that R^2 values higher than 0.26 are substantial. In this research, the R^2 value obtained for endogenous variables was 0.569. (Figure 7.2). It is classified as above-moderate (Chin, 1998) or having a substantial degree of predictive ability (Cohen, 1988).

Additionally, the connection between the variables was carefully examined. According to Henseler *et al.* (2009), the predicted values for path relationships in the structural model should be assessed in sign, size, and significance. When the empirical T-value obtained from the path is more than 1.64 (p 0.10), more significant than 1.96 (p 0.05), or greater than 2.58 (p 0.01), the path is deemed significant. This study accepted β values at the 5% level of significance, conforming to the Hair *et al.* (2011) guideline. All variables positively and significantly impacted organisational performance, with resources and capabilities having the most significant effect ($\beta = 0.430$; $P < 0.05$). As a result, all five hypotheses were supported.

Additionally, the nest effect (f^2) was assessed. The p-value in the findings emphasises the significance of the relationships but does not indicate the magnitude of the effect. Consequently, readers would struggle to interpret data and findings. As a result, this research revealed both substantive (f^2) and statistical significance (p). Kenny's (2015) guidelines were utilised to determine the effect size, with 0.005, 0.01 and 0.025 serving as more realistic parameters for small, medium, and high effect sizes, respectively. The relationships between competitive strategies, the business environment, resources and capabilities, and CRM significantly affect organisational performance, as shown in Figure 7.2. Additionally, the predictive sample reuse technique (Q^2) and the magnitude of R^2 and f^2 can be used to demonstrate predictive relevance effectively (Chin *et al.*, 2008). The Q^2 index demonstrates the model's and PLS parameters' ability to reconstruct data based on the blindfolding procedure. For this research, Q^2 was measured using cross-validated redundancy method. A Q^2 value greater than zero implies that the model is predictively significant, while a Q^2 value less than zero suggests that the model is not predictively relevant. The Q^2 value for the endogenous variable (organisational performance) is positive ($Q^2 = 0.375$), and since $Q^2 > 0$, the model has predictive relevance.

The Goodness of Fit (GoF) index has been used to evaluate the PLS path model's effectiveness in describing various data sets. It was based on Henseler and Sarstedt's (2013) recommendations. It was carried out according to the following formula:

$$GoF = \sqrt{AverageR^2} \times Average(AVE)$$

R² had an average value of 0.445, while AVE had an average value of 0.708. It pointed out that the GoF was 0.315. Akter *et al.* (2011) define GoF_{small} as 0.1, GoF_{medium} as 0.25, and GoF_{large} as 0.36. This research's calculated value (0.315) falls between medium and large, suggesting that the PLS model's GoF effectively explains the variance explained by the model's explanatory variables.

7.5.3 Inner Model Coefficient Sizes and Significance

The findings of the proposed structural model indicate that resources and capabilities have the most significant impact on organisational performance (0.430), followed by the business environment (0.377). Competitive strategies, organisational characteristics, and CRM show a similar positive impact of 0.331, 0.325, and 0.283, respectively. Together, the five exogenous variables explained 56.9% of the variation in the endogenous variable "organisational performance" (R² = 0.569) as shown by the variable circle's values. Organisational characteristics and the business environment account for 45.8% of the organisational resources and capabilities (R²=0.458). While the business environment and resources and capabilities account for 11.6% of the organisation's CRM variance, all four independent variables together account for 63.5% of the variation in the organisation's competitive strategy.

Table 7.5: Structural estimates

Relationship	Total	T Value	P Value	Direct	T Value	P Value	Indirect	T Value	P Value
CRM - OP	0.283	4.367	0.000	0.197	2.567	0.010	0.086	1.84	0.066
CS - OP	0.331	2.189	0.029	0.331	2.189	0.029			
ENV - OP	0.377	3.704	0.000	0.214	2.429	0.015	0.163	2.699	0.007
OC - OP	0.325	2.963	0.003	-0.040	0.334	0.739	0.365	3.793	0.000
RnC - OP	0.430	3.737	0.000	0.259	2.297	0.022	0.171	3.104	0.002

CRM: Customer Relationship Management; CS: Competitive Strategies; ENV: Business environment; OC: Organisational Characteristics; RnC: Resources and Capabilities; OP: Organisational Performance.

Table 7.5 demonstrates the strongest and statistically significant path relationship is between competitive strategies and organisational performance ($\beta=0.331$, $T = 2.189$, $P < 0.05$). Negative insignificant direct relationships between organisational characteristics and performance were discovered ($\beta = -0.040$, $T = 0.334$, $P \neq 0.05$). Alternatively, it shows a statistically significant indirect relationship with organisational performance through competitive strategies ($\beta = 0.365$, $T = 3.793$, $P < 0.05$). This explains the total significance relationship between organisational characteristics and organisational performance ($\beta = 0.325$, $T = 2.963$, $P < 0.05$).

The path coefficient of resources and capabilities with organisational performance demonstrates a statistically significant relationship with $\beta = 0.259$, $T = 2.297$, and $P < 0.05$. Additionally, resources and capabilities have a significant indirect effect on organisational performance through CRM ($\beta = 0.171$, $T = 3.104$, $P < 0.05$). When those two significant relationships are added together, resources and capabilities have the strongest total significant relationship with organisational performance.

As the table indicates, the path coefficient of the relationship between the business environment and organisational performance is statistically significant ($\beta = 0.214$, $T = 2.429$, $P < 0.05$). Additionally, the indirect relationship between the business environment and organisational performance was significant through resources and capabilities and CRM, resulting in a total

indirect impact of ($\beta = 0.163$, $T = 2.699$, $P < 0.05$). The explanation for the total significant relationship with organisational performance ($\beta = 0.377$, $T = 3.704$, $P < 0.05$) was the direct and indirect positive significant relationship with organisational performance.

The CRM's path coefficient presents a significant relationship with organisational performance ($\beta = 0.197$, $T = 2.567$, $P < 0.05$). In comparison, the indirect relationship between the aforementioned variables was shown to be insignificant through competitive strategies ($\beta = 0.086$, $T = 1.840$, $P < 0.05$). Despite the insignificant indirect relationship, the total relationship between CRM and organisational performance was significant ($\beta = 0.283$, $T = 3.819$, $P < 0.05$).

7.6 Discussion

The findings of the study provide empirical support to the following six hypotheses:

- Competitive strategies positively and directly affect organisational performance.
- Organisational characteristics are positively and significantly related to organisational performance.
- Organisational resources and capabilities contribute positively and significantly to organisational performance.
- The business environment positively, directly and indirectly, affects organisational performance.
- CRM positively and directly impacts organisational performance.
- Organisations that emphasise achieving strategic fit with the business environment and implementing generic competitive strategies with appropriate organisational characteristics and resources/capabilities while effectively managing the relationship with their customers would achieve sustainable performance.

The findings suggest that adopting one or more generic strategies would leverage construction organisations' performance and profitability. Additionally, this study demonstrated that construction organisations might address the challenges of their business environment via employing hybrid strategies, which combine several strategies. Thus, rather than adopting only cost-leadership or focus strategies, organisations may choose to be industry cost leaders, to add services or products to particular market niches, or to differentiate themselves from competitors.

The findings show that developing an organisation's decision-making style, management style, and organisational structure all have a significant total and indirect effect on the organisation's performance. The findings are partially consistent with those of Albaum *et al.* (1995) and Oyewobi *et al.* (2017), who discovered a significant link between decision-making style and performance in the marketing and construction industries, respectively. Their findings, however, were contingent on the moderation effect of decision-making style. Moreover, Betts and Ofori (1992) proposed that concepts from other sectors may aid in comprehending the findings. The study's findings are consistent with prior studies in the construction industry, which shows that appropriate management styles, when combined with appropriate competitive strategies may result in improved performance or a competitive advantage (Nicholas, 1990; Naum, 2001). However, none of the preceding studies examined the business environment or customer relationship management as potential determinants of organisational performance. Moreover, this study used different methodology and analyses to investigate the interrelationships between all determinants to explain performance differentials.

Additionally, the findings of this study corroborate those of the resource-based view (RBV) and dynamic capabilities (Barnet, 1991; Teece *et al.*, 1997). They argue that resources and their allocation provide a means of gaining a competitive advantage. The impact of organisational

resources and abilities on performance was established using human and technological resources. Amit and Belcourt (1999) think that human resources can provide a competitive advantage to businesses; nevertheless, Miller *et al.* (2009) believe that construction organisations need to incorporate new technology to remain competitive. While the findings of this research indicate that strategic resources are good predictors of organisational performance, Chew *et al.* (2008) and Newbert (2008) argue that organisations must align resources and capabilities with a competitive strategy in order to attain superior organisational performance. The findings proved that resources and capabilities might serve as an independent predictor of organisational performance.

Organisations may adhere to a particular strategy, develop resources and capabilities, and adopt a variety of management styles and strategies to accomplish their overall organisational objectives. However, they will continue to have no influence over the business environment. The study's findings indicate that New Zealand's construction environment is both munificent and hypercompetitive. Earlier research (Porter, 1980) established the critical role of competition in explaining variation in organisational performance. Indeed, Scherer (1980) believes that businesses compete for survival with limited resources in a particular sector and that the greater the number of firms, the greater the competitive intensity. According to Lawless and Finch (1989), when environmental resources are scarce, the environment implies low munificence, while when environmental resources are abundant, it suggests great munificence. Environmental munificence and competitive intensity have effects on the strategic performance and behaviour of organisations (Kabadayi *et al.*, 2007; Wilden *et al.*, 2013). For instance, in low-munificence environments with few resources, businesses choose to focus on part of the market by improving services and thus lowering their prices. Simultaneously, organisations seek differentiation in a high-munificence environment, as verified by this study's results. New

Zealand construction organisations tend to differentiate their strategy to fit in the munificence construction environment.

This research's results revealed that referral management significantly affects organisational performance as a part of CRM. This outcome may be explained by the low to nil cost of referral management needs. Leveraging customer referral programmes often requires an organisation offering favourable experiences for their consumers and a mechanism for soliciting and expediting referrals. On the other hand, customers' acquisition and regain typically require substantial expenditures (e.g., advertising expenses) to accomplish outcomes that may increase revenue growth while also decreasing profitability. The results showed that organisations might be served better from a managerial decision-making perspective by a consumer selling culture that puts a more substantial premium on existing customers and their ability to promote and ultimately bring new consumers to the organisation.

Moreover, cross- and upselling promotion has a significant effect on the organisational performance views. This outcome can be explained by a company's ability to sell higher-margin products to consumers via cross- and upselling and sell a broader range of the company's complete product offering. Consequently, the beneficial effect of cross- and upselling operations on organisational performance is shown to be increasingly crucial for organisations. These organisations have greater degrees of CRM-compatible alignment owing to their capacity to originate, leverage, and extend selling activities to particular customers.

7.7 Conclusion

In New Zealand, construction organisations have the challenge of being competitive to ensure their long-term survival and significant expansion. The current study investigated the determinants that contribute to performance disparities across these organisations. RBV and DC demonstrated how organisational characteristics, competitive strategies, resources and

capabilities, and the business environment could all contribute to sustained performance. A conceptual model was created based on existing theories and literature. A PLS-SEM technique was used to test and validate the model using data from 101 construction organisations in the New Zealand construction industry.

The research revealed that competitive strategies have a significant and positive relationship with organisational performance. They also affect the relationship between organisational resources and capabilities and performance. Furthermore, it was demonstrated that resources alone could not guarantee better performance unless they were organised into capabilities. On the other side, capabilities would not always lead to better performance; instead, the situation in which capabilities were employed affected performance. Organisational characteristics and CRM were essential determinants of organisational performance.

This study synthesised a variety of theoretical perspectives in order to investigate the reasons for performance differentials and how they could be addressed in order to boost an organisation's competitive advantage. The study established a basis for future researchers interested in the role of inequality in organisational performance development.

At the same time, there are limitations to the present study's results that may restrict their generalisability. The first is that the research was cross-sectional, owing to the specified period of data collecting. Second, this study is centred on the New Zealand construction industry. Finally, the results' generality may be restricted due to the used sample size limitations. A larger sample might have given better statistical significance.

7.8 Epilogue

This chapter was performed to study the interrelationships between calibrated determinants and organisational performance in the New Zealand construction industry. It employed a PLS-SEM

approach to analyse these interrelationships. This chapter designed to address the study's fourth objective as stated in Chapter 1. The following chapter will assess the usability of the proposed PLS model in the construction industry.

Chapter 8 ASSESSING THE USABILITY OF THE PROPOSED PLS MODEL IN CONSTRUCTION

8.1 Introduction

A disconnection between theory and practice in determinants of organisational performance was discussed in the previous chapters. In order to overcome this issue, this study has developed a PLS model. Its computational accuracy has been examined using a set of PLS-SEM techniques (Chapter 7). The collected data from a range of real construction organisations were analysed by the proposed method.

This chapter examine the usability of PLS model through *systematising expert interview* method. Executive managers, CEOs and owners from the construction industry in New Zealand were interviewed. Their responses were analysed using thematic analysis method. The analysis results indicated the extent to which PLS model can satisfy the requirements in construction organisational performance. Accordingly, a number of points were identified that can be included in the further developments.

8.2 General Testing Approach

In order to assess the workability of PLS model in real construction organisations, a series of face-to-face interviews were conducted. In this process, the opinions of the professionals from the New Zealand construction industry were acquired based on their previous personal experiences. A semi-structured interview approach was adopted as part of the assessment process that allows new ideas to flow on the surface and discussed during the interview sessions (Ayas *et al.*, 1993).

8.3 Sampling

The interviewees were selected using a *purposive sampling* approach. In this method, samples are deliberately selected from the experts in the area of research with the aim to find qualified answers to the study questions (Teddie & Yu, 2007; Tongco, 2007; Magrath, 2012). The purposive approach can be applied using variety of strategies (Teddie & Yu, 2007). An *expert sampling* was utilised that focused on receiving knowledge from individuals who possess particular expertise in the field in question. Conducting expert interviews can help to shorten time-consuming data gathering processes, during which the expert enlightens the researcher on the subject and provides a clear insight into the practical aspects of the question. Bogner *et al.* (2009) termed the experts the *crystallisation points* of the process, referring to their role in forming a full and clear understanding of the subject. Hence, the contributed information by the experts can represent the whole area of interest. Even if the sample size is small, the knowledge gained with such approach can serve as a robust source for the analysis of the subject (Tongco, 2007; Magrath, 2012).

In order to reach high-quality results, the experts were expected to possess the following attributes and abilities (Walton, 2010):

- to answer the questions related to the field of their expertise with an acceptable rate of success,
- to apply their knowledge in order to solve problems,
- to be efficient in providing solutions,
- to explain the line of reasoning used to solve the problem, and
- to advise if no solution for a particular problem can be provided.

Additionally, they are expected to be in a position that can apply their personal analyses into practice (Bogner *et al.*, 2009).

Accordingly, this study used the following criteria to identify suitable participants:

Criterion 1: Having broad knowledge and understanding of managing construction organisation.

Criterion 2: Having recent/on-going and direct involvement in construction organisational management.

For this purpose, a list of potential participants from different types of construction organisations in New Zealand was created.

8.4 The Interview Design

A *systematizing expert interview* was undertaken to obtain complete information from the participants through systematic spontaneous communications (Bogner *et al.*, 2009). This type of interview focuses on knowledge of action and experience derived from practice (Bogner *et al.*, 2009). It is probably the most widespread form of expert interview method used in interview-based research (Bogner *et al.*, 2009). The semi-structured interview method used in this study provides a substantial ability to collect exploratory and process knowledge (Lewis *et al.*, 2007).

8.5 Interview Questions

The interview protocol included two types of questions. The closed questions were included to obtain specific answers. It asked the interviewees about the demographic of their experience in the industry. The open-ended questions encouraged the interviewees to provide an extensive answer and requested the experts to criticise the PLS model based on its implementation pathway.

8.6 Interview Session

Each session was designed to take place in approximately 30 minutes. All the interviews were video recorded; however, due to ethical requirements, the interviewees were granted to ask to stop the video recording anytime during the session, without any given reason. Also, they had the option to review the draft of the transcribed interview and withdraw the data even after completion of the interview session.

8.7 Decoding of the Obtained Information

A *thematic analysis* was employed to decode and clarify the information provided by the interviewees. This analysis minimally organizes the collected datasets and describes them in rich detail (Braun & Clarke, 2006). Accordingly, the following phases were carried out to make an acceptable analysis of the interview data (Braun & Clarke, 2006):

- Familiarizing phase: The data were accurately transcribed and reviewed
- Generating initial codes: Each single idea was associated with a code. All the ideas were given equal attention in this regard.
- Searching for themes: The identified codes were combined into a few themes that indicated recurring pattern across the dataset.
- Reviewing themes: The relevant themes were joined and checked against each other as well as against the original data. The results were examined to be internally coherent, consistent, and distinctive.
- Defining and naming themes: The included information from each theme was interpreted and analysed. The analysis results were checked against the quotes to ensure accuracy.
- Producing final report: The themes and findings were organized in a comprehensible flow by establishing a balance between analytic narrative and illustrative quotes.

8.8 Sample Size

This study used the notion of *theoretical saturation* in order to ensure that almost every potential point of the practical application of PLS model was captured. The *theoretical saturation concept* suggests the sampling and analysing process should continue until no new information emerges. In such a situation, the collection of further data is considered to be pointless (Bloor & Wood, 2006; Lewis-Beck *et al.*, 2013).

This study started the sampling process by conducting six virtual interviews in New Zealand. Table 8.1 shows the detailed information on the participants' interviews.

Table 8.1: Interviewees

Participant	Years of Experience in Industry	Number of Employees	Sector
Interviewee 1	<5	40	Windows and door production
Interviewee 2	28	25	Scaffolding
Interviewee 3	19	18	Architectural screening and facades
Interviewee 4	<5	49	Civil Works
Interviewee 5	13	33	Residential building
Interviewee 6	31	56	General construction

The thematic analysis of the interviews' contents determined five main themes within the responses from the participants. The information provided by each of the experts supported a few codes with a number of recurring patterns over the whole dataset. The adjoined patterns resulted in five major themes. Table 8.2 illustrates a matrix that relates the identified themes to the respective participants. As can be seen, the number of themes contributed by each participant was between three and five.

Table 8.2: Themes-interviewee matrix for interviews

	Number of contribute themes	Efficient combination of determinants	Powerful measurement of organisational performance	Extra specialised applications	PLS data identification phase	PLS adaptation phase
Interviewee 1	3	X	X		X	
Interviewee 2	3	X	X		X	
Interviewee 3	3	X	X			X
Interviewee 4	3	X		X		X
Interviewee 5	3	X	X		X	
Interviewee 6	5	X	X	X	X	X

Interviews are typically evaluated based on the richness of their contents rather than the number of interviews (Bowen, 2008). However, finding the thematic saturation ensured the study had captured almost every significant aspect related to the practical capability of the framework.

8.9 Results of Thematic Analysis

Five themes were identified through the thematic analysis of the responses from six experts. The identified themes are as follows:

8.9.1 *Efficient Combination of Determinants*

The selected determinants are efficient in explaining organisational performance differential (Interviewees 1-6). The ability of that combination combined with the interrelationships between the determinants provide remarkable capability for the PLS model to explain

performance differentials (Interviewees 1, 2 and 5). This comprehensive combination allows organisations to look at the determinants from different perspectives. It expands the domain of determinants beyond the typical managerial set. It analyses the determinants from managerial perspective, industrial perspective, employee perspective and customers perspective (Interviewees 1, 5 and 6). It facilitates decision-making in organisations operate in the construction industry, which comprises a multitude of probable scenarios and challenges complicating the decision-making (Interviewee5 and Interviewee 6).

8.9.2 Powerful Measurement of Organisational Performance

The measurement method of organisational performance has been found promising because it presents a holistic view to organisational performance (Interviewees 1, 2, 3, 5 and 6). It covers the performance from the four important perspectives to any organisations (Interviewee5 and interviewee 6). Accordingly, it measures performance from financial, customers, internal business process and learning and growth perspectives. These measurements give sufficient details about the organisational performance. It can explain performance financially and non-financially to better explain the effect of each determinant on the overall performance (Interviewees 1 and 6).

8.9.3 Extra Specialised Applications

It was suggested that the PLS model could be helpful at analysing strengths, weaknesses, opportunities, and threats (SWOT) of any construction organisation (Interviewees 4 and 6). As it enables a reliable assessment of organisation's SWOT based on the selected organisational determinants.

8.9.4 PLS Data Identification Phase

The accuracy of the PLS model is highly dependent on the accuracy of identifying the organisation's goal and business environment. Clear identification of business environment to provide a reliable understanding of the market can be a serious challenge in this regard (Interviewees 1, 2, 5 and 6). The understanding of the business environment variability is not a straightforward task. Even the experienced construction experts can face difficulties in providing accurate explanations (Interviewees 2 and 6). Accordingly, PLS model requires joining with method that can assess the reliability of the identified data (Interviewees 2 and 5).

Apart from difficulties with data identification, the application of the model can be problematic in small organisations (Interviewee 1). Small organisations may not have a clear strategy or underpinning CRM system. Considering clear competitive strategy or adapting CRM system can help to avoid this impediment. It was suggested to use some CRM software packages such as *HubSpot CRM* or *NetSuite*. Direct data exchange between organisations and the standard software packages can significantly facilitate the data identification process (Interviewee 5).

8.9.5 PLS Adaptation Phase

Compliance is a potential issue to be included in the future development of PLS model (Interviewees 3, 4 and 6). Compliance usually contradicts with the basic financial needs (Interviewee 4). Financial needs of an organisation are usually presented by accountants who are looking for better margin. Better margin is risky by itself as it means the organisation needs to charge more or cut costs. Moreover, compliance takes time following all health and safety, traffic management, quality assurance and all paperwork related (Interviewee 4).

An overview of the identified themes shows that three of them have acknowledged different aspects of PLS model capabilities, while the other two have determined factors to be included within the future development of the model. Also, some of the participants contributed to a few ideas that did not appear as a recurring pattern in the whole dataset but represented remarkable

suggestions to be added to the list of future developments. Interviewee 1 recommended that supply chain and shipping systems need to be considered especially in challenging times and circumstances like the COVID-19 era. Interviewee 4 suggested taking into account applications of lean methods.

8.10 Conclusion

In order to assess the practical capability of the proposed PLS model, this study used *the expert interview approach*. It carried out a *thematic analysis* on the expert responses collected by the *systematizing expert interview* method. The analysis indicated five important themes within the interview contents of which three of them approved the practical capabilities of the proposed PLS model. The other two suggested some additional points to be included in the future development of the model. The experts noted the efficient combination of determinants proposed by the PLS model as a key characteristic of its framework that enables a better understanding of organisational performance. Accordingly, this property was stated to provide a clear explanation of performance differentials between the same organisations. In terms of measuring organisational performance, the adopted approach was acknowledged as a capable method to holistically view the organisational performance from four different views. These measurements give sufficient details about financial, customers, internal business process and learning and growth perspectives. Also, the proposed PLS model was recognised as a proper fit to analyse organisation's SWOT.

Simultaneously, the experts suggested further developments may focus on fostering the identification phase to include a method that enables assessment of the reliability of the identified data. Utilising underpinning CRM systems and complying with compliance at the adaptation phase were also proposed as feasible points to be included in future developments. The sampling method presented a useful approach to shortening the long period that was required to apply the proposed PLS model in practice. The results only provide general

knowledge about the capabilities of the method. The full confidence in the practical capabilities of the proposed PLS model will be achieved when it is implemented in a real organisation.

Chapter 9 SUMMARY OF RESEARCH FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

9.1 Introduction

This study aimed to investigate the impact of the main organisational performance determinants in the New Zealand construction industry. The study conducted a comprehensive literature review within the construction management discipline, defining construction industry organisational performance concepts. The literature evaluation served as the foundation for selecting the important factors to be incorporated into the study and developing questions and hypotheses concerning their inter-relationships. The study aimed to answer this important research question: "*What factors determine construction organisations' performance and their interaction in explaining the performance differentials of a construction organisation in New Zealand?*" The answers to these questions are essential in determining what motivates construction organisations to improve their performance and achieve their sustainable existence in the industry. The requirement to find answers to these questions influenced the design of the research methods for the study's qualitative and quantitative strands.

This chapter summarises the significant results from the literature and links them to the research's significant findings. Lastly, this chapter focuses on the contributions of this study to the existing literature, its practical implications, research limitations, and recommendations for future research.

9.2 Aim and Objectives of the Study

This research aimed to examine the factors that cause a difference in the performance of construction organisations in New Zealand, intending to develop a model to improve that performance. To address this primary goal, the research intended to achieve the following specific objectives:

- *To identify the main determinants of organisational performance from literature.* A Systematic Literature Review was performed to build a ground base to calibrate the determinants to the New Zealand context.
- *To specify the main performance determinants of organisations in New Zealand and their conceptual framework.* The Relative Importance Index was used to rank the determinants based on construction professionals' experiences. The important determinants were used to build a model to examine their interrelationships.
- *To examine the nature of relationships between the specified determinants and organisational performance.* The regression method was used to determine the strength and characteristics of those relationships.
- *To develop a model for construction organisational competitiveness which links the interrelationships of the calibrated determinants to the New Zealand construction industry.* PLS-SEM was used to understand the interrelationships to achieve superior performance.

The study was initiated by performing a systematic literature review. The review's goal was to understand fundamental aspects and establish relevant measurements for the research variables. The literature review also sought to identify current research developments in the construction industry strategic management studies while highlighting the gaps. The study used a multiphase approach to collect and analyse empirical data both quantitatively and qualitatively. The study adopted the mixed-methods approach and collected data using a survey questionnaire and semi-structured interviews to collect empirical data. These two sets of findings were analysed separately and then related to one another. As a result, the critical findings provided in this thesis are based on the literature review and sets of primary data collected in this study. These two sets of findings were analysed separately and then related to one another.

9.3 Summary of Gaps Found in the Literature

Globally, the construction industry is becoming risky and fragmented (Proverbs & Faniran, 2001; Walker, 2015). There is a need to comprehend the factors and processes that limit organisations' ability to capitalise on their capabilities and use their resources effectively to achieve competitive advantages (Phua, 2006). In New Zealand, the construction sector generates economic growth, contributing significantly to businesses, employment, and GDP (PwC, 2016). Its expansion has been driven by different factors such as population growth and post-earthquake construction work.

For quite some time, the construction industry in New Zealand has suffered high rates of business failure and insolvency. Despite what appeared to be an everlasting construction boom in New Zealand, it was revealed that construction organisations were unable to fulfil market demand. Stats NZ (2021) reported that more than 50% of construction organisations failed to survive in such a competitive market. Recent high-profile failures of construction firms in New Zealand (e.g., Ebert Construction) have drawn a sharper focus to the business performance. There is a poor understanding of good business practice and performance in enterprises large and small. Businesses need a forward view of upcoming construction projects to allow them to plan and have the confidence to invest in skills and technology. These facts raised the attention for organisations to understand business performance and the factors that determine that performance in the New Zealand construction industry.

For several decades, management researchers have theorised and studied the impact of determinants on organisational performance. The literature identifies 32 determinants as drivers of performance differentials. Among these determinants competitive strategies, organisational characteristics, resources and capabilities, business environment and CRM are important. Previous studies have investigated some of these determinants and their relationship

with organisational performance. However, none of these studies has considered the combined impact of these determinants on organisational performance. Thus, this study investigated these determinants, and the following sub-problems that appeared in the process of conducting this research.

Firstly, a detailed assessment of the literature demonstrated some inconsistencies in the proposed relationship between *organisational characteristics* such as organisational structure, decision making, and organisational performance. Besides, according to some of these studies, organisational performance is dependent on organisational structure and other factors (Nahm *et al.*, 2003), while others such as Mansoor *et al.* (2012) and Nandakumar *et al.* (2010) argued that there is an indirect influence of organisational characteristics on performance. The literature also suggested that the business environments in which organisations operate may influence decision-making processes and choices. For example, some studies claimed a link between rational decision-making processes and higher performance is established in high munificence environments (Oyewobi *et al.*, 2013). In contrast, others claimed that higher-performing organisations use more rational decision-making processes and information to reduce uncertainties in the business environment. Generally, the evaluation of literature revealed a lack of research investigating these claims in the construction industry. This study aimed to fill that gap by investigating the influence of organisational characteristics on organisational performance in the New Zealand construction industry context.

Secondly, strategy researchers dispute how to interpret the effects of the *business environment* on organisational performance. Some studies have discovered a close relationship between strategy and environment and that an organisation's performance is dependent on the interaction of strategy and environment (Ward *et al.*, 1996; Oyewobi *et al.*, 2016), while others believe that environment is not a moderator (Fayzollahi *et al.*, 2013; Galbriath, 1973). Some

previous research demonstrated that a cost-leadership strategy improves organisational performance in a stable environment but has a negative impact on organisational performance in an uncertain one (Nandakumar *et al.*, 2010). The literature review showed the need to investigate the influence of the business environment on organisational performance and competitive strategy.

Thirdly, empirical evidence examining the performance effect of *resources and capability* showed inconclusive results if the moderating influence of competitive strategy has not been investigated (Eisenhardt & Martin, 2000). However, few studies have looked into whether an organisation's capabilities and resources are directly related to organisational performance. A microscopic empirical study in the literature investigates the relationship between organisational resources and capabilities, strategy, and performance in the construction context.

Fourthly, accomplished empirical and theoretical evidence suggests that implementing *CRM* practices impacts organisational performance. Empirically speaking, the literature suggests that successful CRM practices lead to preferable organisational performance in different perspectives like customer satisfaction, retention, and profitability. Theoretically, the fundamental principles of CRM touch the heart of the marketing concept of success in a competitive environment. However, very little research has been conducted on the effect of CRM on organisational performance in the construction context.

Finally, although a few studies have investigated the relationship between organisational performance and *competitive strategies* in the construction industry, most of these studies focused on project or industrial performance. As a result, very little research conducted in New Zealand focuses on the challenges to, or creates a model that helps identify the factors that enhance, organisational performance. Therefore, the present study aimed to fill this gap by

establishing a locally accepted model to improve the performance of construction organisations in New Zealand.

9.4 Summary of Research Findings

This section offers the empirical research findings and connects the findings to the initial objectives of the research.

9.4.1 Objective 1

The first objective of this study was *to determine the main determinants of organisational performance from the literature*. A Systematic Literature Review was performed to build a ground base to calibrate the determinants to the New Zealand context.

A systematic literature review was carried out to obtain an in-depth summary of studies investigating the construction industry's organisational performance determinants. This involved developing and implementing a systematic procedure to investigate a broad range of literature to provide a thorough understanding of performance differentials in the construction industry. The findings indicated that 32 determinants explain performance differentials in construction organisations. The determinants were categorised into six major categories: social influence, management ability, financing ability, operational performance factors, strategic capital, and social influence. The identified relationship between these factors helped establish a conceptual framework that indicates organisational performance by identifying the relationship between the determinants. The results from the systematic literature review recommended a framework that represents the factors that influence organisational performance in the construction industry.

9.4.2 Objective 2

The second research objective was *to specify the main performance determinants of organisations in New Zealand and their conceptual framework*. The Relative Importance Index was used to rank the determinants based on construction professionals' experiences. The important determinants were used to build a model to examine their inter-relationships.

After identifying state of the art on factors that determine organisational performance and the number of factors that can explain performance differentials, it was essential to specify those factors of prime importance to organisational performance in the New Zealand construction industry. The first quantitative and the Relative Importance Index approaches were used to rank the retrieved determinants. The findings revealed that organisational characteristics, resources and capabilities, competitive strategies, business environment, and CRM were significant predictors of organisational performance in the New Zealand construction industry.

9.4.3 Objective 3

The third research objective was *to investigate the nature of relationships between the specified determinants and organisational performance*. The regression method was used to determine the strength and characteristics of those relationships.

After specifying the main determinants of the New Zealand construction organisational performance, it was essential to examine their relationships and organisational performance. Regression methods were employed to determine the strength and nature of those relationships. The second quantitative approach and regression method results showed that competitive strategies, organisational characteristics, resources and capabilities, CRM, and business environment significantly correlated with organisational performance.

9.4.4 Objective 4

The fourth research objective was *developing a model for construction organisational competitiveness which links the calibrated determinants to the New Zealand construction industry.*

The Partial Least Squares Structural Equation Modelling (PLS-SEM) method was used to analyse the combined impacts of the variables on organisational performance and establish the model. The model measured performance through customers, finances, internal business processes, and learning and growth perspectives. The PLS analysis revealed a direct association between organisational performance and competitive strategies, with differentiation strategy having the most impact on performance. Besides, the analysis showed that the relationship between organisational performance and organisational resource and capabilities was statistically significant with the organisational performance indicators. The business environment was found to have direct and indirect impacts on organisational performance. However, the analysis revealed an insignificant direct relationship between organisational characteristics and performance.

In contrast, CRM directly and significantly affected organisational performance, but an insignificant indirect relationship was found. The PLS models showed an overall predictive power of around 57%. Using the goodness of fit index (GoF), a global criterion proposed by Tenenhaus *et al.* (2005), the partial model has a medium explanatory power (GoF= 0.315). The criterion also supports PLS model validation on a global scale (Wetzels *et al.*, 2009).

9.4.5 The Main Research Question

What factors determine construction organisations' performance and their interaction in explaining the performance differentials of a construction organisation in New Zealand?

According to the study, the factors that determine the performance of organisations in the construction industry include organisational characteristics, resources and capabilities, business environment, CRM, and competitive strategies. Although these variables are not all-inclusive, their interconnection explains the difference in performance among organisations operating in the construction sector. The existing contemporary theories (resource-based view and dynamic capabilities) provide helpful explanations for organisational performance differentials. For example, the dynamic capability and the resource-based view explain how organisations can organise their resources into capabilities to attain superior performance. At the same time, industrial organisation theory demonstrates how an organisation achieves sustainable performance by gaining a strategic fit within the business environment. Besides, the complementarities demonstrate that competitive advantage cannot be solely achieved through resources and capabilities unless an organisation pursues an effective strategy. Therefore, integrating these viewpoints aids in developing a competitive strategy and allows organisations to use their resources and capabilities and implement appropriate CRM practices essential in achieving a strategic fit with the business environment and superior performance.

9.5 Contribution to Knowledge

This study gives a detailed explanation of the impact competitive strategy has on organisational performance in the construction industry in New Zealand. It provides a hypothetical description of the relationship between organisational characteristics and organisational performance and an organisational performance model.

Compared to prior empirical research on strategic management in the construction industry, this study customised the effects of organisational characteristics, strategies, resources and capabilities, CRM, and business environment on organisational performance in the New Zealand construction industry. The study also contributed to comprehensively examining the interrelationships between those determinants. The study's mixed methods approach provided

insight into how organisations' strategies affect their performance and how other constructs help organisations achieve sustainable performance.

Furthermore, the results of the tested hypotheses lend credence to the theoretical modelling of the study on the factors that influence differences in organisational performance among organisations operating in the same industry. Six hypotheses (Table 9.1) were tested that contributed to the model informing the nature of the relationships between the main determinants and the organisational performance. According to the study, while disparities in organisational resources can benefit specific organisations more than others, resources alone cannot ensure superior performance. They need to match the organisation's characteristics and to be used in conjunction with a suitable strategy.

Table 9.1: Research hypotheses

	Hypothesis
H1	Competitive strategies are directly\indirectly related to organisational performance
H2	Organisational characteristics are directly\indirectly related to organisational performance
H3	Resources and capabilities are directly\indirectly related to organisational performance
H4	The business environment has a direct and indirect interaction with organisational performance
H5	CRM directly\indirectly affecting the organisational performance
H6	A superior organisational performance can be achieved by obtaining strategic fit with the business environment, organisational characteristics and resources/capability where the relationship with their customers is appropriately managed

The study proposed and tested a structural model that enabled the measuring of organisational performance. The model was built with two external variables and four internal variables. Hypothesis testing partly validated the model. However, the model was entirely validated by PLS-SEM that examined the nexus with the variables obtained in the model. The chain of evidence that improved knowledge is the core of the strategic management discipline. Previous research that has focused on strategic management in the construction industry applied SEM to build models. This study proved that PLS could help modelling the complicated interrelationships of variables.

9.6 Practical Implications of Research Findings and Recommendations

The proposed PLS model can be used as a strategic management method to promote continual improvement. It is critical for obtaining a competitive advantage and ensuring long-term survival in the construction industry. The study proposes the integration of strategic analysis as an essential part of the business plans used by an organisation. It also proposes integrating strategic analysis in determining if an organisation has enough resources to carry out its strategic objectives.

Also, the findings of this study provide empirical information for practitioners within the construction industry on the impact organisational characteristics and strategies have on the performance of construction companies. Besides, the study emphasises strategic analysis and assessment of decision-making structures to achieve sustainable competitive advantage.

The study's findings also provide essential insights for government agencies responsible for policy development and implementation regarding the performance of New Zealand's construction sector, construction professionals, project managers, and senior executives on strategies to measure, improve, and assess the competitiveness and performance of their organisations. The study also revealed the association between resources, capabilities, and competitive strategies, creating sustainable organisational performance. Therefore, managers should understand that differentiation strategy is more efficient when expanding market share through technological resources.

Based on the study findings and research implications, the following *recommendations* are offered to assist organisational management and practitioners in the construction industry in boosting the performance of their organisations.

- Managers should make every effort to offer clarity to employees and stakeholders regarding the purpose of the organisation. With a clear purpose, organisations can achieve their stated goals and enhance their performance. In practice, clarity of

purpose can be attained by conveying the organisation's purpose and goals to stakeholders, and the organisation expects to achieve these goals.

- Business executives must emphasise strategic analysis of the business environment to improve organisational performance. Leaders must understand their organisation's strengths and weaknesses to capitalise on opportunities provided by the environment while reducing or eliminating threats to the organisation's growth.
- Organisational resources and capabilities must be recognised for organisations to create sustained competitive advantage. Therefore, resources and capabilities should be carefully utilised to benefit the company, capitalise on market opportunities, and gain a long-term competitive advantage.
- Construction companies should set up a system to review progress regularly and track deviations from the business plan. Early detection of problems and corrective action can assure the industry's long-term existence.
- It is critical to analyse the features of the business environment when identifying and implementing the management and decision-making styles that are suited to the context. This might help a company stand out from the crowd. Besides, ensuring that employees are informed about the organisation's goals and encouraged to participate in decision-making help bridge the gap between management and employees, hence improving performance.
- The government and government agencies should support construction firms in exporting their products and services to other nations. However, this would have a double effect on the industry. While it will lower the intensity of local competition, it will boost the expansion of organisations participating in the international construction market.

Workable mechanisms such as staff training and retraining, recruiting skilled employees, continuous strategy improvement through performance evaluation, benchmarking against competitors, reducing staff turnover, and establishing a viable reward system can be ensured by effective implementation of the above recommendations.

9.7 Research Limitations

There are various limitations to this study. The study used empirical data to investigate the impact of competitive strategy and organisational characteristics on the factors that determine performance differences among organisations in the construction sector. The study used a mixed methods approach to answer the research questions outlined in Chapter one. Since the study used a limited sample size of 101 responses, generalising the conclusions of this study should be done with caution. Furthermore, several of the study's findings were not precisely articulated. Future studies should investigate how to improve organisational performance using proper business environment knowledge. Besides, the study recognised various aspects of a business environment such as complexity, dynamism, competitive intensity, and munificence. However, it did not investigate the nature of their moderation effect.

Some of the variables used as surrogates for assessing constructs in the quantitative measurement of the study's fundamental variables may not be perfect measures. Although this study used variables and constructs that have theoretical support and have been empirically confirmed by previous studies, this does not guarantee that the measures used in this study were error-free.

Another limitation of this study was using the generic strategies proposed by Porter to assess the strategic approach used by construction organisations to achieve their goals. Various scholars have criticised Porter's typology, claiming that recommending a general method using a framework like Porter's generic strategies is inefficient, as they claim that a strategy must be context specific.

When generalising the findings of this study, it is essential to keep the study's limitations in mind. The findings are inconsistent with and parallel to earlier studies due to changes in sample size and variables used in this study and previous research. There is undoubtedly a need for additional research on these contemporary construction issues to determine the link between organisational performance, business strategy, and organisational environment.

9.8 Recommendations for Future Research

It is feasible to suggest prospective areas for future research based on this study's findings and limitations described in the sections below.

- The purpose of this study was to investigate how construction organisations' resources impact their performance. However, scholars debate the role of resources in the performance of an organisation. While some researchers argue that the resources available to an organisation establish how it competes and achieves higher performance, others argue that resources only cannot provide a sustained competitive advantage to an organisation unless it is transformed into capability. Therefore, an in-depth assessment of the impact of resources on performance is needed, including more variables such as physical resources.
- Strategic analysis of an organisation's environment aids in identifying resources available to it to support its strategic decisions. This may help determine industry competitors, market growth potential, and clients. However, an in-depth assessment of the impact of strategic analysis on performance is needed to complete the study findings.
- This study investigated the impact of the business environment on organisational performance using regression and PLS techniques. The generic model should be enhanced to include moderated relationships between the constructs. Besides, future

research should investigate the background of the environmental factors that affect the relationships between the constructs.

References

- Abu Bakar, A. H., Yusof, M. N., Tufail, M. A., & Virgiyanti, W. (2016). Effect of knowledge management on growth performance in construction industry [Article]. *Management Decision*, 54(3), 735-749. <https://doi.org/10.1108/MD-01-2015-0006>
- Acquaah, M., & Yasai-Ardekani, M. (2008). Does the implementation of a combination competitive strategy yield incremental performance benefits? A new perspective from a transition economy in Sub-Saharan Africa. *Journal of Business Research*, 61(4), 346-354. <https://doi.org/10.1016/j.jbusres.2007.06.021>
- Adhiprasanggaa, A., Sarib, A. P., Putrac, T. W., & Wibisonod, D. (2016). Develop balanced scorecard from KPI in construction companies (Case study: Stated-owned enterprise). *Asia Pacific Journal of Advanced Business and Social Studies*, 2(2).
- Ajayi, J. R. (2012). Strategies for sustainable housing cooperatives in South Africa. *Unpublished Philosophiae Doctor Thesis, Nelson Mandela Metropolitan University*.
- Akadiri, O. P. (2011). Development of a multi-criteria approach for the selection of sustainable materials for building projects.
- Akhter, A. G. a. J. (2018). Impact of Capital Structure on Profitability: An empirical analysis of listed firms in India. *Asian Journal of Managerial Science*, 7(2), 1-6.
- Akter, S., D'Ambra, J., & Ray, P. (2011). Trustworthiness in mHealth information services: an assessment of a hierarchical model with mediating and moderating effects using partial least squares (PLS). *Journal of the American Society for Information Science and Technology*, 62(1), 100-116.
- Albaum, G., Herche, J., & Murphy, B. (1995). Decision making style influences on the valuation and use of information by managers. *Journal of Marketing Theory and Practice*, 3(2), 1-19.
- Allen, R. S., Dawson, G., Wheatley, K., & White, C. S. (2008). Perceived diversity and organizational performance. *Employee Relations*, 30(1), 20-33. <https://doi.org/10.1108/01425450810835392>
- Allen, R. S., & Helms, M. M. (2006). Linking strategic practices and organizational performance to Porter's generic strategies [Article]. *Business Process Management Journal*, 12(4), 433-454. <https://doi.org/10.1108/14637150610678069>
- Al-Meer, A. R. A. (1989). Organizational commitment: A comparison of Westerners, Asians, and Saudis. *International Studies of Management & Organization*, 19(2), 74-84.
- Alqudah, H. E., Poshdar, M., Rotimi, J., & Oyewobi, L. (2018). Determinants of construction organisations' performance: a systematic literature review. *Proc., 42nd Australian Universities Building Education Association (AUBEA)*.
- Amaratunga, D., Baldry, D., Sarshar, M., & Newton, R. (2002). Quantitative and qualitative research in the built environment: application of "mixed" research approach. *Work*

study.

- Amit, R., & Belcourt, M. (1999). Human resources management processes: A value-creating source of competitive advantage [Article]. *European Management Journal*, 17(2), 174-181. [https://doi.org/10.1016/S0263-2373\(98\)00076-0](https://doi.org/10.1016/S0263-2373(98)00076-0)
- Amzat, I. H., & Idris, D. A. R. (2012). Structural equation models of management and decision-making styles with job satisfaction of academic staff in Malaysian research university. *International Journal of Educational Management*.
- Ang, L., & Buttle, F. (2006). CRM software applications and business performance. *Journal of Database Marketing & Customer Strategy Management*, 14(1), 4-16. <https://doi.org/https://doi.org/10.1057/palgrave.dbm.3250034>
- Anikeeff, M. A., & Sriram, V. (2008). Construction management strategy and developer performance [Article]. *Engineering, construction and architectural management*, 15(6), 504-513. <https://doi.org/10.1108/09699980810916951>
- Ankrah, N. A. (2007). *An investigation into the impact of culture on construction project performance*.
- Ankrah, N. A., Proverbs, D., & Debrah, Y. (2009). Factors influencing the culture of a construction project organisation: An empirical investigation [Article]. *Engineering, construction and architectural management*, 16(1), 26-47. <https://doi.org/10.1108/09699980910927877>
- ANZ. (2017). *New Zealand construction Residential & Non-Residential Market Update*. ANZ.
- Ardley, B. (2008). Articles of faith and mystic matrices: Marketing textbooks and the misrepresentation of reality. *Qualitative Market Research: An International Journal*.
- Assefa, Y., Rivera, O. P., & Vencatachellum, D. (2014). Macro and micro determinants of project performance. *African Evaluation Journal*, 2(1), 9.
- Audia, P. G., Locke, E. A., & Smith, K. G. (2000). The paradox of success: An archival and a laboratory study of strategic persistence following radical environmental change [Article]. *Academy of management journal*, 43(5), 837-853. <https://doi.org/10.2307/1556413>
- Auh, S., & Menguc, B. (2005). Balancing exploration and exploitation: The moderating role of competitive intensity. *Journal of Business Research*, 58(12), 1652-1661. <https://doi.org/10.1016/j.jbusres.2004.11.007>
- Awodele, O. A. (2012). *Framework for managing risk in privately financed market projects in Nigeria* Heriot-Watt University].
- Baines, A., & Langfield-Smith, K. (2003). Antecedents to management accounting change: A structural equation approach [Article]. *Accounting, Organizations and Society*, 28(7-8), 675-698. [https://doi.org/10.1016/S0361-3682\(02\)00102-2](https://doi.org/10.1016/S0361-3682(02)00102-2)

- Balatbat, M. C., Lin, C. Y., & Carmichael, D. G. (2011). Management efficiency performance of construction businesses: Australian data. *Engineering, construction and architectural management*.
<https://doi.org/https://doi.org/10.1108/09699981111111120>
- Banker, R. D., Mashruwala, R., & Tripathy, A. (2014). Does a differentiation strategy lead to more sustainable financial performance than a cost leadership strategy? *Management Decision*.
- Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99-120.
- Barney, J. B. (1986). Strategic factor markets: Expectations, luck, and business strategy. *Management science*, 32(10), 1231-1241.
- Barney, J. B. (2001). Is the resource-based “view” a useful perspective for strategic management research? Yes. *Academy of management review*, 26(1), 41-56.
- Barney, J. B. (2014). *Gaining and sustaining competitive advantage*. Pearson higher ed.
- Baum, J. R., & Wally, S. (2003). Strategic decision speed and firm performance [Article]. *Strategic Management Journal*, 24(11), 1107-1129. <https://doi.org/10.1002/smj.343>
- Beard, D. W., & Dess, G. G. (1981). Corporate-level strategy, business-level strategy, and firm performance. *Academy of management journal*, 24(4), 663-688.
- Benson, P. G., Saraph, J. V., & Schroeder, R. G. (1991). The effects of organizational context on quality management: an empirical investigation. *Management science*, 37(9), 1107-1124.
- Berger, P. G., & Ofek, E. (1995). Diversification's effect on firm value. *Journal of financial economics*, 37(1), 39-65.
- Bernard, H. R., & Bernard, H. R. (2013). *Social research methods: Qualitative and quantitative approaches*. Sage.
- Betts, M., & Ofori, G. (1992). Strategic planning for competitive advantage in construction [Article]. *Construction management and economics*, 10(6), 511-532.
<https://doi.org/10.1080/014461992000000049>
- Betts, M., & Ofori, G. (1994). Strategic planning for competitive advantage in construction: The institutions [Article]. *Construction management and economics*, 12(3), 203-217.
<https://doi.org/10.1080/014461994000000029>
- Bhatti, M. I., Awan, H., & Razaq, Z. (2014). The key performance indicators (KPIs) and their impact on overall organizational performance. *Quality & Quantity*, 48(6), 3127-3143.
- Bolton, P., & Scharfstein, D. S. (1990). A theory of predation based on agency problems in financial contracting. *The American economic review*, 93-106.

- Borrego, M., Foster, M. J., & Froyd, J. E. (2014). Systematic literature reviews in engineering education and other developing interdisciplinary fields. *Journal of Engineering Education*, 103(1), 45-76.
- Boulding, W., Staelin, R., Ehret, M., & Johnston, W. J. (2005). A customer relationship management roadmap: What is known, potential pitfalls, and where to go. *Journal of marketing*, 69(4), 155-166. <https://doi.org/https://doi.org/10.1509/jmkg.2005.69.4.155>
- Bourne, M., Mills, J., Wilcox, M., Neely, A., & Platts, K. (2000). Designing, implementing and updating performance measurement systems. *International Journal of Operations and Production Management*, 20(7), 754-771. <https://doi.org/10.1108/01443570010330739>
- Boyd, B. K., Finkelstein, S., & Gove, S. (2005). How advanced is the strategy paradigm? The role of particularism and universalism in shaping research outcomes. *Strategic Management Journal*, 26(9), 841-854.
- Brush, C., & Vanderwerf, P. (1992). A comparison of methods and sources on performance by size and age in small service and retail firms. *J. Bus. Venturing*, 14(3), 157-170.
- Bryman, A. (2006). Integrating quantitative and qualitative research: how is it done? *Qualitative research*, 6(1), 97-113.
- Budayan, C., Dikmen, I., & Birgonul, M. T. (2013). Investigation of drivers and modes of differentiation in Turkish construction industry [Article]. *Engineering, construction and architectural management*, 20(4), 345-364. <https://doi.org/10.1108/ECAM-09-2011-0083>
- Bui, T. (2020). How do financial leverage and supply chain finance influence firm performance? Evidence from construction sector. *Uncertain Supply Chain Management*, 8(2), 285-290.
- Burgess, K., Singh, P. J., & Koroglu, R. (2006). Supply chain management: a structured literature review and implications for future research. *International journal of operations & production Management*.
- Burja, C. (2011). FACTORS INFLUENCING THE COMPANIES' PROFITABILITY. *Annales Universitatis Apulensis-Series Oeconomica*, 13(2).
- Burke, L. A., & Steensma, H. K. (1998). Toward a model for relating executive career experiences and firm performance. *Journal of Managerial Issues*, 86-102.
- Camarero Izquierdo, C., Gutiérrez Cillán, J., & San Martín Gutiérrez, S. (2005). The impact of customer relationship marketing on the firm performance: A Spanish case. *Journal of Services Marketing*, 19(4), 234-244. <https://doi.org/10.1108/08876040510605262>
- Capar, N., & Kotabe, M. (2003). The relationship between international diversification and performance in service firms [Article]. *Journal of International Business Studies*, 34(4), 345-355. <https://doi.org/10.1057/palgrave.jibs.8400036>

- Cattell, R. B. (1966). The scree test for the number of factors. *Multivariate behavioral research*, 1(2), 245-276.
- Chan, P., Cooper, R., & Tzortzopoulos, P. (2005). Organizational learning: Conceptual challenges from a project perspective [Article]. *Construction management and economics*, 23(7), 747-756. <https://doi.org/10.1080/01446190500127021>
- Chang, H.-P. (2010). Relationships Among Supply Chain Management, Strategic Alliances, and Organizational Performance with Implications for the Construction Industry.
- Cheah, C. Y. J., & Garvin, M. J. (2004). An open framework for corporate strategy in construction [Article]. *Engineering, construction and architectural management*, 11(3), 176-188. <https://doi.org/10.1108/09699980410535787>
- Chen, C. J. (2003). The effects of environment and partner characteristics on the choice of alliance forms [Article]. *International Journal of Project Management*, 21(2), 115-124. [https://doi.org/10.1016/S0263-7863\(01\)00082-5](https://doi.org/10.1016/S0263-7863(01)00082-5)
- Chen, P. H., Ong, C. F., & Hsu, S. C. (2016). The linkages between internationalization and environmental strategies of multinational construction firms [Article]. *Journal of cleaner production*, 116, 207-216. <https://doi.org/10.1016/j.jclepro.2015.12.105>
- Chen, Y.-Y. M. (2004). *Path-based failure and evolution management*. University of California, Berkeley.
- Chen, Z. X., & Francesco, A. M. (2003). The relationship between the three components of commitment and employee performance in China [Article]. *Journal of Vocational Behavior*, 62(3), 490-510. [https://doi.org/10.1016/S0001-8791\(02\)00064-7](https://doi.org/10.1016/S0001-8791(02)00064-7)
- Cheng, B., Ioannou, I., & Serafeim, G. (2014). Corporate social responsibility and access to finance. *Strategic Management Journal*, 35(1), 1-23.
- Chew, D. A. S., Yan, S., & Cheah, C. Y. J. (2008). Core capability and competitive strategy for construction SMEs in China [Article]. *Chinese Management Studies*, 2(3), 203-214. <https://doi.org/10.1108/17506140810895898>
- Chi, T., Kilduff, P. P. D., & Gargeya, V. B. (2009). Alignment between business environment characteristics, competitive priorities, supply chain structures, and firm business performance. *International Journal of Productivity and Performance Management*, 58(7), 645-669. <https://doi.org/10.1108/17410400910989467>
- Chin, C. H., Lo, M. C., & Ramayah, T. (2013). Market orientation and organizational performance: The moderating role of service quality [Article]. *SAGE Open*, 3(4). <https://doi.org/10.1177/2158244013512664>
- Chin, W. W. (1998). The partial least squares approach to structural equation modeling. *Modern methods for business research*, 295(2), 295-336.
- Chin, W. W. (2010). How to write up and report PLS analyses. In *Handbook of partial least squares* (pp. 655-690). Springer.

- Choi, B., Poon, S. K., & Davis, J. G. (2008). Effects of knowledge management strategy on organizational performance: A complementarity theory-based approach [Article]. *Omega*, 36(2), 235-251. <https://doi.org/10.1016/j.omega.2006.06.007>
- Choi, J., & Russell, J. S. (2005). Long-term entropy and profitability change of United States public construction firms [Article]. *Journal of Management in Engineering*, 21(1), 17-26. [https://doi.org/10.1061/\(ASCE\)0742-597X\(2005\)21:1\(17\)](https://doi.org/10.1061/(ASCE)0742-597X(2005)21:1(17))
- Christ, T. W. (2009). Designing, teaching, and evaluating two complementary mixed methods research courses [Article]. *Journal of mixed methods research*, 3(4), 292-325. <https://doi.org/10.1177/1558689809341796>
- Chung, H. F. L., Wang, C. L., & Huang, P. h. (2012). A contingency approach to international marketing strategy and decision-making structure among exporting firms [Article]. *International Marketing Review*, 29(1), 54-87. <https://doi.org/10.1108/02651331211201543>
- Claver-Cortés, E., Pertusa-Ortega, E. M., & Molina-Azorín, J. F. (2012). Characteristics of organizational structure relating to hybrid competitive strategy: Implications for performance [Article]. *Journal of Business Research*, 65(7), 993-1002. <https://doi.org/10.1016/j.jbusres.2011.04.012>
- Cohen, W. M., Nelson, R. R., & Walsh, J. P. (2002). Links and impacts: the influence of public research on industrial R&D. *Management science*, 48(1), 1-23.
- Cohn, J. (1988). Statistical power analysis for the behavioral sciences. *Lawrence Earlham Associates, Hillsdale, NJ*.
- Collis, D. J., & Montgomery, C. A. (2008). Competing on resources. *Harvard business review*, 86(7/8), 140.
- Corp.", I. (2020). *IBM SPSS Statistics for Windows*. In (Version 27.0.) IBM Corp.
- Corredor, P., & Goñi, S. (2011). TQM and performance: Is the relationship so obvious? *Journal of Business Research*, 64(8), 830-838.
- Council, N. R. (2009). *Advancing the competitiveness and efficiency of the US construction industry*. National Academies Press.
- Covin, J. G., & Slevin, D. P. (1991). A conceptual model of entrepreneurship as firm behavior. *Entrepreneurship theory and practice*, 16(1), 7-26.
- Creswell, J. W. (2009). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. Sage.
- Creswell, J. W. (2020). *Educational research: Planning, conducting, and evaluating quantitative and qualitative approaches to research* (6th edition ed.). Pearson Education Limited

- Creswell, J. W., & Clark, V. L. P. (2017). *Designing and conducting mixed methods research* (3rd ed.). Sage publications.
- Creswell, J. W., Plano Clark, V., Gutmann, M. L., & Hanson, W. E. (2003). An expanded typology for classifying mixed methods research into designs. *A. Tashakkori y C. Teddlie, Handbook of mixed methods in social and behavioral research*, 209-240.
- Crossan, M. M., & Apaydin, M. (2010). A multi-dimensional framework of organizational innovation: A systematic review of the literature. *Journal of management studies*, 47(6), 1154-1191.
- Cullen, P. (1990). The turbulent boundary between water science and water management [Article]. *Freshwater Biology*, 24(1), 201-209. <https://doi.org/10.1111/j.1365-2427.1990.tb00319.x>
- Cyert, R. M., & March, J. G. (1963). *A behavioral theory of the firm* (Vol. 2). Englewood Cliffs, NJ.
- Dainty, A. (2008). Methodological pluralism in construction management research. *Advanced research methods in the built environment*, 1, 1-13.
- Dainty, A. R. (1998). *A grounded theory of the determinants of women's under-achievement in large construction companies* [Loughborough University].
- Dainty, A. R., Cheng, M.-I., & Moore, D. R. (2003). Redefining performance measures for construction project managers: an empirical evaluation. *Construction Management & Economics*, 21(2), 209-218.
- Dancey, C., & Reidy, J. (2020). *Statistics Without Maths for Psychology 8th edition PDF ebook*. Pearson Higher Ed.
- Dancey, C. P., & Reidy, J. (2007). *Statistics without maths for psychology*. Pearson education.
- Dansoh, A. (2005). Strategic planning practice of construction firms in Ghana [Article]. *Construction management and economics*, 23(2), 163-168. <https://doi.org/10.1080/0144619042000241435>
- Davenport, T. H., & Prusak, L. (1998). *Working knowledge: How organizations manage what they know*. Harvard Business Press.
- Davies, A., Dodgson, M., Gann, D., & MacAulay, S. (2017). *Five rules for managing large, complex projects*. MIT Sloan Management Review.
- Deng, X., Pheng, L. S., & Zhao, X. (2014). Project system vulnerability to political risks in international construction projects: The case of Chinese contractors. *Project Management Journal*, 45(2), 20-33.
- Denis, D. J., Denis, D. K., & Yost, K. (2002). Global diversification, industrial diversification, and firm value [Article]. *Journal of Finance*, 57(5), 1951-1979. <https://doi.org/10.1111/0022-1082.00485>

- Denscombe, M. (2008). Communities of practice: A research paradigm for the mixed methods approach [Article]. *Journal of mixed methods research*, 2(3), 270-283. <https://doi.org/10.1177/1558689808316807>
- Denzin, N. K., & Lincoln, Y. S. (2008). *Introduction: The discipline and practice of qualitative research*. SAGE.
- Dess, G. G., & Beard, D. W. (1984). Dimensions of organizational task environments. *Administrative science quarterly*, 52-73. <https://doi.org/https://doi.org/10.2307/2393080>
- Dess, G. G., & Davis, P. S. (1984). Porter's (1980) generic strategies as determinants of strategic group membership and organizational performance. *Academy of management journal*, 27(3), 467-488. <https://doi.org/10.5465/256040>
- Dess, G. G., & Keats, B. W. (1987). Environmental Assessment and Organizational Performance: An Exploratory Field Study. *Academy of Management Proceedings*,
- Dess, G. G., & Rasheed, A. M. A. (1991). Conceptualizing and Measuring Organizational Environments: A Critique and Suggestions [Article]. *Journal of Management*, 17(4), 701-710. <https://doi.org/10.1177/014920639101700404>
- Dikmen, I., & Birgönül, M. T. (2003). Strategic perspective of turkish construction companies [Review]. *Journal of Management in Engineering*, 19(1), 33-40. [https://doi.org/10.1061/\(ASCE\)0742-597X\(2003\)19:1\(33\)](https://doi.org/10.1061/(ASCE)0742-597X(2003)19:1(33))
- Dikmen, I., Birgonul, M. T., & Budayan, C. (2009). Strategic group analysis in the construction industry [Article]. *Journal of Construction Engineering and Management*, 135(4), 288-297. [https://doi.org/10.1061/\(ASCE\)0733-9364\(2009\)135:4\(288\)](https://doi.org/10.1061/(ASCE)0733-9364(2009)135:4(288))
- Dikmen, I., Birgonul, M. T., & Kiziltas, S. (2005). Prediction of organizational effectiveness in construction companies [Review]. *Journal of Construction Engineering and Management*, 131(2), 252-261. [https://doi.org/10.1061/\(ASCE\)0733-9364\(2005\)131:2\(252\)](https://doi.org/10.1061/(ASCE)0733-9364(2005)131:2(252))
- Duh, R.-R., Hsu, A. W.-H., & Huang, P.-W. (2012). Determinants and performance effect of TQM practices: An integrated model approach. *Total Quality Management & Business Excellence*, 23(5-6), 689-701.
- Duncan, R. B. (1972). Characteristics of organizational environments and perceived environmental uncertainty. *Administrative science quarterly*, 313-327. <https://doi.org/https://doi.org/10.2307/2392145>
- Durdyev, S., Ismail, S., Ihtiyar, A., Bakar, N. F. S. A., & Darko, A. (2018). A partial least squares structural equation modeling (PLS-SEM) of barriers to sustainable construction in Malaysia. *Journal of cleaner production*, 204, 564-572.
- Dutton, J. E., Fahey, L., & Narayanan, V. K. (1983). Toward understanding strategic issue diagnosis. *Strategic Management Journal*, 4(4), 307-323.

<https://doi.org/10.1002/smj.4250040403>

- Easterby-Smith, M., Thorpe, R., & Jackson, P. R. (2012). *Management research*. Sage.
- Eisenhardt, K. M., & Schoonhoven, C. B. (1990). Organizational growth: Linking founding team, strategy, environment, and growth among US semiconductor ventures, 1978-1988. *Administrative science quarterly*, 504-529.
- ElFar, A., Elsaid, A. M., & Elsaid, E. (2017). How knowledge management implementation affects the performance of Egyptian construction companies [Article]. *Journal of Applied Business Research*, 33(3), 409-438. <https://doi.org/10.19030/jabr.v33i3.9934>
- El-Mashaleh, M., O'Brien, W. J., & Minchin Jr, R. E. (2006). Firm performance and information technology utilization in the construction industry. *Journal of Construction Engineering and Management*, 132(5), 499-507.
- Enshassi, A., Mohamed, S., & Abushaban, S. (2009). Factors affecting the performance of Construction projects in the Gaza Strip. *Journal of Civil Engineering and Management*, 15(3), 269-280. <https://doi.org/10.3846/1392-3730.2009.15.269-280>
- Fayzollahi, S., Shirmohammadi, A., & Latifian, B. (2013). The impact of environmental factors on total quality management and firm performance: Evidence from industrial enterprises in Iran. *International Research Journal of Applied and Basic Sciences*, 4(10), 3237-3245.
- Fellows, R. F., & Liu, A. M. (2015). *Research methods for construction*. John Wiley & Sons.
- Fendt, J., Kaminska-Labbé, R., & Sachs, W. M. (2008). Producing and socializing relevant management knowledge: Re-turn to pragmatism [Review]. *European Business Review*, 20(6), 471-491. <https://doi.org/10.1108/09555340810913502>
- Fernández-Muñiz, B., Montes-Peón, J. M., & Vázquez-Ordás, C. J. (2009). Relation between occupational safety management and firm performance [Article]. *Safety Science*, 47(7), 980-991. <https://doi.org/10.1016/j.ssci.2008.10.022>
- Field, A. (2013). *Discovering statistics using IBM SPSS statistics*. sage.
- Filstead, W. J. (1979). Qualitative methods: A needed perspective in evaluation research. *Qualitative and quantitative methods in evaluation research*, 1.
- Flanagan, R., Lu, W., Shen, L., & Jewell, C. (2007). Competitiveness in construction: A critical review of research [Review]. *Construction management and economics*, 25(9), 989-1000. <https://doi.org/10.1080/01446190701258039>
- Forbes, L. H., & Ahmed, S. M. (2010). *Modern construction: lean project delivery and integrated practices*. CRC press.
- Fornell, C., & Larcker, D. F. (1981). Structural equation models with unobservable variables and measurement error: Algebra and statistics. In: Sage Publications Sage CA: Los Angeles, CA.

- Frow, P., & Payne, A. (2007). Towards the 'perfect' customer experience. *Journal of Brand Management*, 15(2), 89-101. <https://doi.org/https://doi.org/10.1057/palgrave.bm.2550120>
- Galbraith, J. (1973). Designing complex organizations. *Reading, Mass.*
- García-Bernal, J., & García-Casarejos, N. (2016). Determinants in the adoption of total quality management (tqm) in the construction sector: a management perspective. *Revista de la Construcción. Journal of Construction*, 15(2), 28-36.
- García-Bernal, J., & Ramirez-Aleson, M. (2010). Increasing the organisational performance benefits of TQM: an approach based on organisational design. *Total Quality Management*, 21(4), 363-382.
- Geringer, J. M., Tallman, S., & Olsen, D. M. (2000). Product and international diversification among Japanese multinational firms [Article]. *Strategic Management Journal*, 21(1), 51-80. [https://doi.org/10.1002/\(SICI\)1097-0266\(200001\)21:1<51::AID-SMJ77>3.0.CO;2-K](https://doi.org/10.1002/(SICI)1097-0266(200001)21:1<51::AID-SMJ77>3.0.CO;2-K)
- Ghobadian, A., & O'Regan, N. (2006). The impact of ownership on small firm behaviour and performance. *International small business journal*, 24(6), 555-586. <https://doi.org/10.1177/0266242606069267>
- Gimenez, C., & Tachizawa, E. M. (2012). Extending sustainability to suppliers: a systematic literature review. *Supply Chain Management: an international journal*.
- Giritli, H., & Oraz, G. T. (2004). Leadership styles: Some evidence from the Turkish construction industry [Article]. *Construction management and economics*, 22(3), 253-262. <https://doi.org/10.1080/01446190310001630993>
- Gold, A. H., Malhotra, A., & Segars, A. H. (2001). Knowledge management: An organizational capabilities perspective. *Journal of management information systems*, 18(1), 185-214.
- Goleman, D. (2017). *Leadership that gets results (Harvard business review classics)*. Harvard Business Press.
- Gorla, N., Somers, T. M., & Wong, B. (2010). Organizational impact of system quality, information quality, and service quality. *The Journal of Strategic Information Systems*, 19(3), 207-228.
- Gosselin, M. (2005). An empirical study of performance measurement in manufacturing firms [Article]. *International Journal of Productivity and Performance Management*, 54(5-6), 419-437. <https://doi.org/10.1108/17410400510604566>
- Govindarajan, V. (1989). Implementing competitive strategies at the business unit level: Implications of matching managers to strategies [Article]. *Strategic Management Journal*, 10(3), 251-269. <https://doi.org/10.1002/smj.4250100305>

- Greener, I. (2011). *Designing social research: A guide for the bewildered*. Sage Publications.
- Gudergan, S. P., Ringle, C. M., Wende, S., & Will, A. (2008). Confirmatory tetrad analysis in PLS path modeling [Article]. *Journal of Business Research*, 61(12), 1238-1249. <https://doi.org/10.1016/j.jbusres.2008.01.012>
- Gündüz, M., Nielsen, Y., & Özdemir, M. (2013). Quantification of delay factors using the relative importance index method for construction projects in Turkey [Article]. *Journal of Management in Engineering*, 29(2), 133-139. [https://doi.org/10.1061/\(ASCE\)ME.1943-5479.0000129](https://doi.org/10.1061/(ASCE)ME.1943-5479.0000129)
- Guthrie, J. P., & Datta, D. K. (1997). Contextual influences on executive selection: Firm characteristics and CEO experience [Article]. *Journal of management studies*, 34(4), 537-560. <https://doi.org/10.1111/1467-6486.00062>
- Hair, J. F., Anderson, R. E., Babin, B. J., & Black, W. C. (2010). Multivariate data analysis: A global perspective (Vol. 7). In: Upper Saddle River, NJ: Pearson.
- Hair, J. F., Ringle, C. M., & Sarstedt, M. (2011). PLS-SEM: Indeed a silver bullet. *Journal of Marketing Theory and Practice*, 19(2), 139-152.
- Hair, J. F., Sarstedt, M., Pieper, T. M., & Ringle, C. M. (2012). The use of partial least squares structural equation modeling in strategic management research: a review of past practices and recommendations for future applications. *Long Range Planning*, 45(5-6), 320-340.
- Hair Jr, J. F., Sarstedt, M., Hopkins, L., & Kuppelwieser, V. G. (2014). Partial least squares structural equation modeling (PLS-SEM): An emerging tool in business research. *European Business Review*.
- Hamel, G., & Prahalad, C. (1990). Strategic intent. *Mckinsey quarterly*(1), 36-61.
- Hamel, G., & Prahalad, C. K. (1996). *Competing for the Future*. Harvard Business Press.
- Harrington, B., & Ladge, J. (2009). Present dynamics and future directions for organizations. *Organizational Dynamics*, 38(2), 148-157.
- Harrison, E. F., & Pelletier, M. A. (1998). Foundations of strategic decision effectiveness. *Management Decision*, 36(3), 147-159. <https://doi.org/10.1108/00251749810208931>
- Hart, G. (1996). The five W's: An old tool for the new task of task analysis. *Technical communication*, 43(2), 139-145.
- Haspeslagh, M., Eeckloo, K., & Delesie, L. B. (2012). Validation of a new concept: Aptitudes of psychiatric nurses caring for depressed patients. *Journal of Research in Nursing*, 17(5), 438-452. <https://doi.org/10.1177/1744987110387489>
- Hausman, A. (2001). Variations in relationship strength and its impact on performance and satisfaction in business relationships [Article]. *Journal of Business and Industrial Marketing*, 16(6-7), 600-616. <https://doi.org/10.1108/EUM00000000006194>

Hawawini, G., Subramanian, V., & Verdin, P. (2003). Is performance driven by industry-or firm-specific factors? A new look at the evidence. *Strategic Management Journal*, 24(1), 1-16.

Henderson, R., & Mitchell, W. (1997). The interactions of organizational and competitive influences on strategy and performance. *Strategic Management Journal*, 18(S1), 5-14.

Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the academy of marketing science*, 43(1), 115-135.

[Record #460 is using a reference type undefined in this output style.]

Henseler, J., & Sarstedt, M. (2013). Goodness-of-fit indices for partial least squares path modeling [Article]. *Computational Statistics*, 28(2), 565-580. <https://doi.org/10.1007/s00180-012-0317-1>

Hilal, A. H., & Alabri, S. S. (2013). Using NVivo for data analysis in qualitative research. *International interdisciplinary journal of education*, 2(2), 181-186.

Hill, C. W. (1988). Differentiation versus low cost or differentiation and low cost: A contingency framework. *Academy of management review*, 13(3), 401-412. <https://doi.org/10.5465/amr.1988.4306957>

Ho, P. H. K. (2016). Analysis of Competitive Environments, Business Strategies, and Performance in Hong Kong's Construction Industry. *Journal of Management in Engineering*, 32(2). [https://doi.org/10.1061/\(ASCE\)ME.1943-5479.0000399](https://doi.org/10.1061/(ASCE)ME.1943-5479.0000399)

Holt, G. D., & Goulding, J. S. (2014). Conceptualisation of ambiguous-mixed methods within building and construction research [Article]. *Journal of Engineering, Design and Technology*, 12(2), 244-262. <https://doi.org/10.1108/JEDT-02-2013-0020>

Hong, Y., Chan, D. W., Chan, A. P., & Yeung, J. F. (2012). Critical analysis of partnering research trend in construction journals. *Journal of Management in Engineering*, 28(2), 82-95.

Hoque, Z. (2004). A contingency model of the association between strategy, environmental uncertainty and performance measurement: Impact on organizational performance [Article]. *International Business Review*, 13(4), 485-502. <https://doi.org/10.1016/j.ibusrev.2004.04.003>

Horta, I. M., Kapelko, M., Oude Lansink, A., & Camanho, A. S. (2016). The impact of internationalization and diversification on construction industry performance [Article]. *International Journal of Strategic Property Management*, 20(2), 172-183. <https://doi.org/10.3846/1648715X.2015.1123201>

Hoskisson, R. E., Hitt, M. A., Wan, W. P., & Yiu, D. (1999). Theory and research in strategic management: Swings of a pendulum [Article]. *Journal of Management*, 25(3), 417-456. <https://doi.org/10.1177/014920639902500307>

- Howard, G. S., Cole, D. A., & Maxwell, S. E. (1987). Research productivity in psychology based on publication in the journals of the American psychological association. *American Psychologist*, 42(11), 975.
- Hulland, J. (1999). Use of partial least squares (PLS) in strategic management research: A review of four recent studies. *Strategic Management Journal*, 20(2), 195-204.
- Hunger, J. D., & Wheelen, T. L. (2011). *Essentials of Strategic Management* (P. Education, Ed. 5th ed ed.). Prentice Hall.
- Hussein Amzat, I., & Abdul Rahman Idris, D. (2012). Structural equation models of management and decision-making styles with job satisfaction of academic staff in Malaysian research university [Article]. *International Journal of Educational Management*, 26(7), 616-645. <https://doi.org/10.1108/09513541211263700>
- Ibrahim, Y. M., & Kaka, A. P. (2007). The impact of diversification on the performance of UK construction firms [Article]. *Journal of Financial Management of Property and Construction*, 12(2), 73-86. <https://doi.org/10.1108/13664380780001095>
- Idrus A.B, & B., N. J. (2002). Construction related factors influencing the choice of concrete floor systems [Article]. *Construction management and economics*, 20(1), 13-19. <https://doi.org/10.1080/01446190110101218>
- Institute), C. C. I. (2009). *ustainable design and constructionfor industrial construction: Implementation resources*. In: *ImplementationResource* 250-3.
- Isik, Z., Arditi, D., Dilmen, I., & Talat Birgonul, M. (2010). The role of exogenous factors in the strategic performance of construction companies. *Engineering, construction and architectural management*, 17(2), 119-134. <https://doi.org/10.1108/09699981011024650>
- Jalali, S., & Wohlin, C. (2012). Systematic literature studies: database searches vs. backward snowballing. Proceedings of the 2012 ACM-IEEE international symposium on empirical software engineering and measurement,
- Jang, Y., Ahn, Y., Park, M., Lee, H. S., & Kwon, N. (2019). Business models and performance of international construction companies [Article]. *Sustainability (Switzerland)*, 11(9), Article 2575. <https://doi.org/10.3390/su11092575>
- Jashapara, A. (2003). Cognition, culture and competition: an empirical test of the learning organization. *The Learning Organization*.
- Jayachandran, S., Sharma, S., Kaufman, P., & Raman, P. (2005). The role of relational information processes and technology use in customer relationship management. *Journal of marketing*, 69(4), 177-192. <https://doi.org/10.1509/jmkg.2005.69.4.177>
- Jiang, N., & Carpenter, V. (2013). A case study of issues of strategy implementation in internationalization of higher education [Article]. *International Journal of Educational Management*, 27(1), 4-18. <https://doi.org/10.1108/09513541311289792>

- Johnson, J. W., & LeBreton, J. M. (2004). History and use of relative importance indices in organizational research [Review]. *Organizational Research Methods*, 7(3), 238-257. <https://doi.org/10.1177/1094428104266510>
- Johnson, R. B., & Onwuegbuzie, A. J. (2004). Mixed Methods Research: A Research Paradigm Whose Time Has Come [Article]. *Educational Researcher*, 33(7), 14-26. <https://doi.org/10.3102/0013189X033007014>
- Johnson, R. B., Onwuegbuzie, A. J., & Turner, L. A. (2007). Toward a definition of mixed methods research. *Journal of mixed methods research*, 1(2), 112-133.
- Kabadayi, S., Eyuboglu, N., & Thomas, G. P. (2007). The performance implications of designing multiple channels to fit with strategy and environment. *Journal of marketing*, 71(4), 195-211. <https://doi.org/10.1509/jmkg.71.4.195>
- Kagioglou, M., Cooper, R., & Aouad, G. (2001). Performance management in construction: a conceptual framework. *Construction management and economics*, 19(1), 85-95. <https://doi.org/10.1080/01446190010003425>
- Kale, S., & Arditi, D. (2002). Competitive positioning in United States construction industry [Article]. *Journal of Construction Engineering and Management*, 128(3), 238-247. [https://doi.org/10.1061/\(ASCE\)0733-9364\(2002\)128:3\(238\)](https://doi.org/10.1061/(ASCE)0733-9364(2002)128:3(238))
- Kale, S., & Arditi, D. (2003). Differentiation, conformity, and construction firm performance [Review]. *Journal of Management in Engineering*, 19(2), 52-59. [https://doi.org/10.1061/\(ASCE\)0742-597X\(2003\)19:2\(52\)](https://doi.org/10.1061/(ASCE)0742-597X(2003)19:2(52))
- Kang, J., Cheah, C. Y. J., & Chew, D. A. S. (2005). Strategic analysis of large Chinese construction enterprises. Association of Researchers in Construction Management, ARCOM 2005 - Proceedings of the 21st Annual Conference,
- Kaplan, R. S., & Norton, D. P. (1996). Using the balanced scorecard as a strategic management system. In: Harvard business review Boston.
- Kaplan, R. S., & Norton, D. P. (2001). *The strategy-focused organization: How balanced scorecard companies thrive in the new business environment*. Harvard Business Press.
- Kaplan, R. S., & Norton, D. P. (2005). The balanced scorecard: measures that drive performance. *Harvard business review*, 83(7), 172.
- Keats, B. W., & Hitt, M. A. (1988). A causal model of linkages among environmental dimensions, macro organizational characteristics, and performance. *Academy of management journal*, 31(3), 570-598. <https://doi.org/https://doi.org/10.5465/256460>
- Kenny, D. A. (2015). Measuring model fit.
- Kerdpitak, C., & Jermisittiparsert, K. (2020). Influence of Engineering Education and Integrated Quality & Environmental Management on Quality, Firm and Environmental Performance. *Test Engineering and Management*, 82(1), 3452-3463.

- Ketchen Jr, D. J., Thomas, J. B., & Snow, C. C. (1993). Organizational configurations and performance: A comparison of theoretical approaches. *Academy of management journal*, 36(6), 1278-1313.
- Kim, H. J., & Reinschmidt, K. F. (2012). Market structure and organizational performance of construction organizations [Article]. *Journal of Management in Engineering*, 28(2), 212-220. [https://doi.org/10.1061/\(ASCE\)ME.1943-5479.0000082](https://doi.org/10.1061/(ASCE)ME.1943-5479.0000082)
- Kim, H. K. (2014). Work-Life Balance and Employees' Performance: The Mediating Role of Affective Commitment. *Global Business & Management Research*, 6(1).
- Kim, K., Von Spakovsky, M. R., Wang, M., & Nelson, D. J. (2011). A hybrid multi-level optimization approach for the dynamic synthesis/design and operation/control under uncertainty of a fuel cell system. *Energy*, 36(6), 3933-3943.
- King, A. W., & Zeithaml, C. P. (2001). Competencies and firm performance: Examining the causal ambiguity paradox. *Strategic Management Journal*, 22(1), 75-99. [https://doi.org/10.1002/1097-0266\(200101\)22:1<75::AID-SMJ145>3.0.CO;2-I](https://doi.org/10.1002/1097-0266(200101)22:1<75::AID-SMJ145>3.0.CO;2-I)
- King, E. G., Macdonald, S. J., & Long, A. D. (2012). Properties and power of the Drosophila synthetic population resource for the routine dissection of complex traits [Article]. *Genetics*, 191(3), 935-949. <https://doi.org/10.1534/genetics.112.138537>
- Kitchenham, B., & Charters, S. (2007). Guidelines for performing systematic literature reviews in software engineering.
- Klapper, L. (2006). The role of factoring for financing small and medium enterprises. *Journal of banking & Finance*, 30(11), 3111-3130.
- Knecht, M. (2013). *Diversification, industry dynamism, and economic performance: The impact of dynamic-related diversification on the multi-business firm*. Springer Science & Business Media.
- Kohtamäki, M., Kraus, S., Mäkelä, M., & Rönkkö, M. (2012). The role of personnel commitment to strategy implementation and organisational learning within the relationship between strategic planning and company performance [Article]. *International Journal of Entrepreneurial Behaviour and Research*, 18(2), 159-178. <https://doi.org/10.1108/13552551211204201>
- Kotha, S., & Orne, D. (1989). Generic manufacturing strategies: A conceptual synthesis [Article]. *Strategic Management Journal*, 10(3), 211-231. <https://doi.org/10.1002/smj.4250100303>
- Kotha, S., & Vadlamani, B. L. (1995). Assessing generic strategies: An empirical investigation of two competing typologies in discrete manufacturing industries [Article]. *Strategic Management Journal*, 16(1), 75-83. <https://doi.org/10.1002/smj.4250160108>
- Kraus, S., Mitter, C., Eggers, F., & Stieg, P. (2017). Drivers of internationalization success: a conjoint choice experiment on German SME managers [Article]. *Review of Managerial*

- Science*, 11(3), 691-716. <https://doi.org/10.1007/s11846-016-0201-4>
- Kuhn, T. S. (1970). Reflections on my critics. *Criticism and the Growth of Knowledge*, 4, 231.
- KUMARASWAMY, M. M. (1999). PROFITING FROM HARMONY—IN CONSTRUCTION PROCUREMENT AND MANAGEMENT. *Profitable Partnering in Construction Procurement*, 85-92.
- Kuo, Y. L. (2013). Technology readiness as moderator for construction company performance. *Industrial Management & Data Systems*.
- Lagorio, A., Pinto, R., & Golini, R. (2016). Research in urban logistics: a systematic literature review. *International Journal of Physical Distribution & Logistics Management*.
- Lambert, D. M., Cooper, M. C., & Pagh, J. D. (1998). Supply Chain Management: Implementation Issues and Research Opportunities [Article]. *The International Journal of Logistics Management*, 9(2), 1-20. <https://doi.org/10.1108/09574099810805807>
- Langford, D., & Male, S. (2008). *Strategic management in construction*. John Wiley & Sons.
- Lansley, P. (1994). Analysing construction organizations [Article]. *Construction management and economics*, 12(4), 337-348. <https://doi.org/10.1080/01446199400000043>
- Lansley, P. R. (1987). Corporate strategy and survival in the UK construction industry [Article]. *Construction management and economics*, 5(2), 141-155. <https://doi.org/10.1080/01446198700000013>
- Lawrence, P. R., & Lorsch, J. W. (1967). *Organization and environment managing differentiation and integration*.
- Lee, F. H., Lee, T. Z., & Wu, W. Y. (2012). The relationship between human resource management practices, business strategy and firm performance: Evidence from steel industry in Taiwan. *International Journal of Human Resource Management*, 21(9), 1351-1372. <https://doi.org/10.1080/09585192.2010.488428>
- Lee, Y., Moon, H., & Lee, H. (2011). Investigating the structural hierarchy of quality capabilities in construction organizations [Article]. *Journal of Asian Architecture and Building Engineering*, 10(1), 141-148. <https://doi.org/10.3130/jaabe.10.141>
- Leedy, P. D., & Ormrod, J. E. (2015). *Practical research: Planning and design*. Pearson.
- Lekkakos, S. D., & Serrano, A. (2016). Supply chain finance for small and medium sized enterprises: the case of reverse factoring [Article]. *International Journal of Physical Distribution and Logistics Management*, 46(4), 367-392. <https://doi.org/10.1108/IJPDLM-07-2014-0165>
- Lenz, R. T. (1981). 'Determinants' of organizational performance: An interdisciplinary review [Article]. *Strategic Management Journal*, 2(2), 131-154. <https://doi.org/10.1002/smj.4250020204>

- Lenz, R. T., & Engledow, J. L. (1986). Environmental analysis: The applicability of current theory. *Strategic Management Journal*, 7(4), 329-346. <https://doi.org/10.1002/smj.4250070404>
- Leung, M. Y., Skitmore, M., & Chan, Y. S. (2007). Subjective and objective stress in construction cost estimation [Article]. *Construction management and economics*, 25(10), 1063-1075. <https://doi.org/10.1080/01446190701573296>
- Li, S., & Ling, F. Y. Y. (2012). Critical strategies for Chinese architectural, engineering and construction firms to achieve profitability [Article]. *Engineering, construction and architectural management*, 19(5), 495-511. <https://doi.org/10.1108/09699981211259586>
- Li, S. K., & Jones, G. (2010). A Study of the Effect of Functional Subcultures on the Performance of Hong Kong Construction Companies [Article]. *Systemic Practice and Action Research*, 23(6), 509-528. <https://doi.org/10.1007/s11213-010-9170-8>
- Li, Y., & Tan, C. H. (2013). Matching business strategy and CIO characteristics: The impact on organizational performance [Article]. *Journal of Business Research*, 66(2), 248-259. <https://doi.org/10.1016/j.jbusres.2012.07.017>
- Lim, J. N., Schultmann, F., & Ofori, G. (2010). Tailoring competitive advantages derived from innovation to the needs of construction firms. *Journal of Construction Engineering and Management*, 136(5), 568-580.
- Limsila, K., & Ogunlana, S. O. (2008). Performance and leadership outcome correlates of leadership styles and subordinate commitment [Article]. *Engineering, construction and architectural management*, 15(2), 164-184. <https://doi.org/10.1108/09699980810852682>
- Lin, G., & Shen, Q. (2007). Measuring the performance of value management studies in construction: critical review. *Journal of Management in Engineering*, 23(1), 2-9.
- Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. sage.
- Lingard, H., Francis, V., & Turner, M. (2012). Work-life strategies in the Australian construction industry: Implementation issues in a dynamic project-based work environment [Article]. *International Journal of Project Management*, 30(3), 282-295. <https://doi.org/10.1016/j.ijproman.2011.08.002>
- Lleras, C. (2005). Path analysis. *Encyclopedia of social measurement*, 3(1), 25-30.
- Love, P. E. D., Holt, G. D., & li, H. (2002). Triangulation in construction management research [Review]. *Engineering, construction and architectural management*, 9(4), 294-303. <https://doi.org/10.1108/eb021224>
- Lu, W., & Yuan, H. (2011). A framework for understanding waste management studies in construction. *Waste management*, 31(6), 1252-1260.
- Lukas, B. A., Tan, J. J., & Hult, G. T. M. (2001). Strategic fit in transitional economies: The

- case of China's electronics industry. *Journal of Management*, 27(4), 409-429. [https://doi.org/10.1016/S0149-2063\(01\)00101-5](https://doi.org/10.1016/S0149-2063(01)00101-5)
- Lynch. (2012). *Strategic management (6th ed.)*. Pearson Prentice Hall.
- Ma, H., Zeng, S., Shen, G. Q., Lin, H., & Chen, H. (2016). International diversification and corporate social responsibility: An empirical study of Chinese contractors [Article]. *Management Decision*, 54(3), 750-774. <https://doi.org/10.1108/MD-07-2015-0322>
- Madu, C. N., Kuei, C. H., & Jacobs, R. A. (1996). An empirical assessment of the influence of quality dimensions on organizational performance [Article]. *International Journal of Production Research*, 34(7), 1943-1962. <https://doi.org/10.1080/00207549608905006>
- Maes, J., Sels, L., & Roodhooft, F. (2005). Modelling the link between management practices and financial performance. Evidence from small construction companies [Review]. *Small Business Economics*, 25(1), 17-34. <https://doi.org/10.1007/s11187-005-4255-y>
- Magnier-Watanabe, R., & Senoo, D. (2008). Organizational characteristics as prescriptive factors of knowledge management initiatives [Article]. *Journal of Knowledge Management*, 12(1), 21-36. <https://doi.org/10.1108/13673270810852368>
- Male, S., & Stocks, R. (1991). *Competitive advantage in construction*. Butterworth Heinemann.
- Marôco, J. (2010). *Análise de equações estruturais: Fundamentos teóricos, software & aplicações*. ReportNumber, Lda.
- Martínez-Román, J. A., Tamayo, J. A., & Gamero, J. (2017). Innovativeness and its influence on growth and market extension in construction firms in the Andalusian region [Article]. *Journal of Engineering and Technology Management - JET-M*, 43, 19-33. <https://doi.org/10.1016/j.jengtecman.2016.11.002>
- Maxcy, S. J. (2003). The new pragmatism and social science and educational research. In *Ethical foundations for educational administration* (pp. 155-177). Routledge.
- MBIE. (2017). *Future demand for construction workers*.
- MBIE. (2020). *National Construction Pipeline report* (A Forecast of Building and Construction Activity, Issue.
- MBIE. (2021). *Construction fact sheet - January 2021*.
- McArthur, A. W., & Nystrom, P. C. (1991). Environmental dynamism, complexity, and munificence as moderators of strategy-performance relationships. *Journal of Business Research*, 23(4), 349-361. [https://doi.org/10.1016/0148-2963\(91\)90020-X](https://doi.org/10.1016/0148-2963(91)90020-X)
- McGeorge, D. Z., P. (2013). *Construction management: New direction* (3rd ed. ed.). Wiley-Blackwell.
- McWilliams, A., & Siegel, D. (2000). Corporate social responsibility and financial

- performance: Correlation or misspecification? [Article]. *Strategic Management Journal*, 21(5), 603-609. [https://doi.org/10.1002/\(SICI\)1097-0266\(200005\)21:5<603::AID-SMJ101>3.0.CO;2-3](https://doi.org/10.1002/(SICI)1097-0266(200005)21:5<603::AID-SMJ101>3.0.CO;2-3)
- McWilliams, A., & Siegel, D. (2001). Corporate social responsibility: A theory of the firm perspective [Review]. *Academy of management review*, 26(1), 117-127. <https://doi.org/10.5465/AMR.2001.4011987>
- McWilliams, A., Siegel, D. S., & Wright, P. M. (2006). Corporate social responsibility: Strategic implications [Review]. *Journal of management studies*, 43(1), 1-18. <https://doi.org/10.1111/j.1467-6486.2006.00580.x>
- Miller, A., Radcliffe, D., & Isokangas, E. (2009). A perception-influence model for the management of technology implementation in construction. *Construction Innovation*.
- Miller, C. C., & Cardinal, L. B. (1994). Strategic planning and firm performance: A synthesis of more than two decades of research. *Academy of management journal*, 37(6), 1649-1665.
- Miller, D. (1988). Relating Porter's business strategies to environment and structure: Analysis and performance implications. *Academy of management journal*, 31(2), 280-308.
- Mintzberg, H. (1979). An emerging strategy of "direct" research. *Administrative science quarterly*, 24(4), 582-589. <https://doi.org/https://doi.org/10.2307/2392364>
- Mithas, S., Krishnan, M. S., & Fornell, C. (2005). Why do customer relationship management applications affect customer satisfaction? *Journal of marketing*, 69(4), 201-209. <https://doi.org/https://doi.org/10.1509/jmkg.2005.69.4.201>
- Modigliani, F., & Miller, M. H. (1958). The cost of capital, corporation finance and the theory of investment. *The American economic review*, 48(3), 261-297.
- Mohammad, H. S., Bujang, I., & Hakim, T. A. (2019). Capital structure and financial performance of Malaysian construction firms [Review]. *Asian Economic and Financial Review*, 9(12), 1306-1319. <https://doi.org/10.18488/journal.aefr.2019.912.1306.1319>
- Morgan, R. M., & Hunt, S. D. (1994). The commitment-trust theory of relationship marketing. *Journal of marketing*, 58(3), 20-38.
- Morrison, E., & Thurnell, D. (2012). Employee preferences for work-life benefits in a large New Zealand construction company [Article]. *Australasian Journal of Construction Economics and Building*, 12(1), 12-25. <https://doi.org/10.5130/ajceb.v12i1.2358>
- Muhwezi, L., Acai, J., & Otim, G. (2014). An assessment of the factors causing delays on building construction projects in Uganda. *International journal of construction engineering and management*, 3(1), 13-23.
- Mumuni, A. G., & O'Reilly, K. (2014). Examining the impact of customer relationship management on deconstructed measures of firm performance. *Journal of Relationship Marketing*, 13(2), 89-107.

<https://doi.org/https://doi.org/10.1080/15332667.2014.910073>

- Murray, A. I. (1988). A contingency view of Porter's "generic strategies". *Academy of management review*, 13(3), 390-400. <https://doi.org/10.5465/amr.1988.4306951>
- Nair, A. (2006). Meta-analysis of the relationship between quality management practices and firm performance-implications for quality management theory development [Article]. *Journal of Operations Management*, 24(6), 948-975. <https://doi.org/10.1016/j.jom.2005.11.005>
- Nanda, A. (2018). Does it pay to be socially responsible for construction companies? International Conference on Informatics and Semiotics in Organisations,
- Nandakumar, M. (2008). Strategy formulation and implementation in manufacturing organisations-the impact on Performance. *Unpublished thesis submitted to Middlesex University in partial fulfilment of the requirements for the degree of Doctor of Philosophy, Middlesex University Business School, London, UK.*
- Nandakumar, M. K., Ghobadian, A., & O'Regan, N. (2010). Business-level strategy and performance: The moderating effects of environment and structure. *Management Decision*, 48(6), 907-939. <https://doi.org/10.1108/00251741011053460>
- Nau, D. (1995). Mixing methodologies: Can bimodal research be a viable post-positivist tool. *The qualitative report*, 2(3), 1-5.
- Neuendorf, K. A. (2017). *The content analysis guidebook*. sage.
- Newbert, S. L. (2008). Value, rareness, competitive advantage, and performance: A conceptual-level empirical investigation of the resource-based view of the firm [Article]. *Strategic Management Journal*, 29(7), 745-768. <https://doi.org/10.1002/smj.686>
- Newcombe, R., Langford, D., & Fellows, R. (1990). *Construction management 2: Management systems*. Mitchell London.
- Nguyen, V. C. (2020). Human capital, capital structure choice and firm profitability in developing countries: An empirical study in Vietnam [Article]. *Accounting*, 6(2), 127-136. <https://doi.org/10.5267/j.ac.2019.11.003>
- Nicholas, J. M. (1990). *Managing business and engineering projects: concepts and implementation*. Prentice Hall.
- Nirajini, A., & Priya, K. (2013). Impact of capital structure on financial performance of the listed trading companies in Sri Lanka. *International Journal of Scientific and Research Publications*, 3(5), 1-9.
- Niven, P. R. (2002). *Balanced scorecard step-by-step: Maximizing performance and maintaining results*. John Wiley & Sons.
- Niven, P. R. (2008). *Balanced scorecard: Step-by-step for government and nonprofit agencies*.

John Wiley & Sons.

- Noktehdan, M., Shahbazpour, M., & Wilkinson, S. (2015). Driving innovative thinking in the New Zealand construction industry [Article]. *Buildings*, 5(2), 297-309. <https://doi.org/10.3390/buildings5020297>
- Nonaka, I., & Takeuchi, H. (1995). *The knowledge-creating company: How Japanese companies create the dynamics of innovation*. Oxford university press.
- Noon, M., Blyton, P., & Morrell, K. (2013). *The realities of work: Experiencing work and employment in contemporary society*. Macmillan International Higher Education.
- Norušis, M. J. (2012). *IBM SPSS statistics 19 statistical procedures companion* (Vol. 496). prentice hall Upper Saddle River, NJ, USA:.
- Nugraha, A., & Putranto, L. (2019). The effect of heavy equipment management on the performance of the construction project and the construction company. IOP Conference Series: Materials Science and Engineering,
- NZ, S. (2019, 25 October). *Construction industry at the top of the ladder for business counts growth*. Stats NZ. <https://www.stats.govt.nz/news/construction-industry-at-the-top-of-the-ladder-for-business-counts-growth>
- NZ, S. (2021). *New Zealand business demography statistics*. Retrieved August 2021 from http://nzdotstat.stats.govt.nz/wbos/Index.aspx?_ga=2.200317870.1431429195.1630886987-1093434214.1620863696&_gac=1.254129786.1630889674.Cj0KCQjw1dGJBhD4ARIsANb6OdkcYsLLHN1dgNK3eQru31HTtpe9ihpIw8ngsrYwtXFd2S2c6EJ3-_saAlzzEALw_wcB
- O'Cass, A., & Weerawardena, J. (2010). The effects of perceived industry competitive intensity and marketing-related capabilities: Drivers of superior brand performance. *Industrial Marketing Management*, 39(4), 571-581.
- Ofori, G., & Lean Chan, S. (2000). Growth paths of construction enterprises in Singapore, 1980–98 [Review]. *Engineering, construction and architectural management*, 7(3), 307-321. <https://doi.org/10.1108/eb021155>
- Olson, E. M., & Slater, S. F. (2002). The balanced scorecard, competitive strategy, and performance. *Business Horizons*, 45(3), 11-16.
- Ortega, M. J. R. (2010). Competitive strategies and firm performance: Technological capabilities' moderating roles [Article]. *Journal of Business Research*, 63(12), 1273-1281. <https://doi.org/10.1016/j.jbusres.2009.09.007>
- Osarenkhoe, A. (2006). Customer-centric strategy: a longitudinal study of implementation of a customer relationship management solution. *International Journal of Technology Marketing*, 1(2), 115-144. <https://doi.org/https://doi.org/10.1504/IJTMKT.2006.008867>

- Othman, A. A., Rahman, S. A., Sundram, V. P. K., & Bhatti, M. A. (2015). Modelling marketing resources, procurement process coordination and firm performance in the Malaysian building construction industry [Article]. *Engineering, construction and architectural management*, 22(6), 644-668. <https://doi.org/10.1108/ECAM-02-2014-0030>
- Oyekunle Oyewobi, L., Olukemi Windapo, A., & Cattell, K. S. (2013). Impact of business diversification on South African construction companies' corporate performance [Article]. *Journal of Financial Management of Property and Construction*, 18(2), 110-127. <https://doi.org/10.1108/JFMPC-12-2012-0045>
- Oyewobi, L. O., Windapo, A. O., & Bamidele James, R. O. (2015). An empirical analysis of construction organisations' competitive strategies and performance. *Built Environment Project and Asset Management*, 5(4), 417-431. <https://doi.org/10.1108/BEPAM-10-2013-0045>
- Oyewobi, L. O., Windapo, A. O., Jimoh, R. A., & Rotimi, J. O. B. (2019). Performance, resources and capabilities of construction organisations: The mediating role of competitive strategies. *International Journal of Construction Supply Chain Management*, 9(1), 35-39. <https://doi.org/10.14424/ijscsm901019-35-59>
- Oyewobi, L. O., Windapo, A. O., & Rotimi, J. O. B. (2016). Environment, competitive strategy, and organizational characteristics: A path analytic model of construction organizations' performance in South Africa. *Canadian Journal of Administrative Sciences*, 33(3), 213-226. <https://doi.org/10.1002/cjas.1384>
- Oyewobi, L. O., Windapo, A. O., & Rotimi, J. O. B. (2017). Determinants of construction organisational performance: A partial least square-path analytic method [Article]. *Journal of Financial Management of Property and Construction*, 22(1), 37-61. <https://doi.org/10.1108/JFMPC-05-2016-0021>
- Pamulu, M. S. (2010). *Strategic management practices in the construction industry: a study of Indonesian enterprises* Queensland University of Technology].
- Panuwatwanich, K., & Nguyen, T. T. (2017). Influence of Organisational Culture on Total Quality Management Implementation and Firm Performance: Evidence from the Vietnamese Construction Industry [Article]. *Management and Production Engineering Review*, 8(1), 5-15. <https://doi.org/10.1515/mper-2017-0001>
- Parkes, L. P., & Langford, P. H. (2008). Work-life balance or work-life alignment? A test of the importance of work-life balance for employee engagement and intention to stay in organisations. *Journal of Management & Organization*, 14(3), 267-284.
- Parnell, J. A., O'Regan, N., & Ghobadian, A. (2006). Measuring performance in competitive strategy research [Article]. *International Journal of Management and Decision Making*, 7(4), 408-417. <https://doi.org/10.1504/IJMDM.2006.010246>
- Parvatiyar, A., & Sheth, J. N. (2001). Customer relationship management: Emerging practice, process, and discipline. *Journal of Economic & Social Research*, 3(2).

- Payne, A., & Frow, P. (2005). A strategic framework for customer relationship management. *Journal of marketing*, 69(4), 167-176. <https://doi.org/https://doi.org/10.1509/jmkg.2005.69.4.167>
- Pelham, A. M. (1999). Influence of environment, strategy, and market orientation on performance in small manufacturing firms [Article]. *Journal of Business Research*, 45(1), 33-46. [https://doi.org/10.1016/S0148-2963\(98\)00026-5](https://doi.org/10.1016/S0148-2963(98)00026-5)
- Penrose, E. (2009). *The Theory of the Growth of the Firm* (4th ed.). Oxford university press.
- Pertusa-Ortega, E. M., Molina-Azorín, J. F., & Claver-Cortés, E. (2008). A comparative analysis of the influence that different fit perspectives have on firm performance [Article]. *Management Research*, 6(2), 139-150. <https://doi.org/10.2753/JMR1536-5433060205>
- Pertusa-Ortega, E. M., Molina-Azorín, J. F., & Claver-Cortés, E. (2010). Competitive strategy, structure and firm performance: A comparison of the resource-based view and the contingency approach [Article]. *Management Decision*, 48(8), 1282-1303. <https://doi.org/10.1108/00251741011076799>
- Peteraf, M., Di Stefano, G., & Verona, G. (2013). The elephant in the room of dynamic capabilities: Bringing two diverging conversations together. *Strategic Management Journal*, 34(12), 1389-1410. <https://doi.org/10.1002/smj.2078>
- Pfohl, H. C., & Gomm, M. (2009). Supply chain finance: Optimizing financial flows in supply chains [Article]. *Logistics Research*, 1(3-4), 149-161. <https://doi.org/10.1007/s12159-009-0020-y>
- Pham, H., & Kim, S. Y. (2019). The effects of sustainable practices and managers' leadership competences on sustainability performance of construction firms [Article]. *Sustainable Production and Consumption*, 20, 1-14. <https://doi.org/10.1016/j.spc.2019.05.003>
- Phua, F. T. T. (2006). Predicting construction firm performance: An empirical assessment of the differential impact between industry- and firm-specific factors [Article]. *Construction management and economics*, 24(3), 309-320. <https://doi.org/10.1080/01446190500435127>
- Pinto, J. K., & Mantel, S. J. (1990). The causes of project failure. *IEEE transactions on engineering management*, 37(4), 269-276.
- Ponterotto, J. G. (2005). Qualitative research in counseling psychology: A primer on research paradigms and philosophy of science [Review]. *Journal of Counseling Psychology*, 52(2), 126-136. <https://doi.org/10.1037/0022-0167.52.2.126>
- Porter, M. E. (1980). *Competitive advantage: Creating and sustaining superior performance*. Free Press.
- Porter, M. E. (1985). *Competitive Advantage: Creating and Sustaining Superior Performance*. Free Press.

- Potosky, D., & Ramakrishna, H. V. (2002). The moderating role of updating climate perceptions in the relationship between goal orientation, self-efficacy, and job performance [Article]. *Human Performance*, 15(3), 275-297. https://doi.org/10.1207/S15327043HUP1503_03
- Powers, T. L., & Hahn, W. (2004). Critical competitive methods, generic strategies, and firm performance [Article]. *International Journal of Bank Marketing*, 22(1), 43-64. <https://doi.org/10.1108/02652320410514924>
- Prahalad, C. K., & Hamel, G. (1997). The core competence of the corporation. In *Strategische Unternehmensplanung/Strategische Unternehmensführung* (pp. 969-987). Springer.
- Prajogo, D. I., & McDermott, C. M. (2005). The relationship between total quality management practices and organizational culture [Article]. *International Journal of Operations and Production Management*, 25(11), 1101-1122. <https://doi.org/10.1108/01443570510626916>
- Prescott, J. E. (1986). Environments as moderators of the relationship between strategy and performance. *Academy of management journal*, 29(2), 329-346.
- Price, A. (2003). The strategy process within large construction organisations. *Engineering, construction and architectural management*.
- Price, A., Ganiev, B., & Newson, E. (2003). Changing strategic management practice within the UK construction industry. *Strategic Change*, 12(7), 347-366.
- Price, A. D. F., & Newson, E. (2003). Strategic management: Consideration of paradoxes, processes, and associated concepts as applied to construction [Article]. *Journal of Management in Engineering*, 19(4), 183-192. [https://doi.org/10.1061/\(ASCE\)0742-597X\(2003\)19:4\(183\)](https://doi.org/10.1061/(ASCE)0742-597X(2003)19:4(183))
- Proverbs, D. G., & Faniran, O. O. (2001). International construction performance comparisons: A study of 'European' and Australian contractors [Review]. *Engineering, construction and architectural management*, 8(4), 284-291. <https://doi.org/10.1108/eb021189>
- Psomas, E. L., & Jaca, C. (2016). The impact of total quality management on service company performance: evidence from Spain [Article]. *International Journal of Quality and Reliability Management*, 33(3), 380-398. <https://doi.org/10.1108/IJQRM-07-2014-0090>
- PwC. (2016). Valuing the role of construction in the New Zealand economy.
- Qualtrics. (2020). *Qualtrics*. In Qualtrics. <https://www.qualtrics.com>
- Randhawa, G., & Kaur, K. (2014). Organizational climate and its correlates. *Journal of Management Research*, 14(1), 25-40.
- Raps, A. (2005). Strategy implementation—an insurmountable obstacle? *Handbook of business strategy*.

- Ray, S. (2004). Environment-Strategy-Performance Linkages: A Study of Indian Firms during Economic Liberalization. *Vikalpa*, 29(2), 9-24. <https://doi.org/10.1177/0256090920040202>
- Reid, M. (2019, October 25). *Construction industry at the top of the ladder for business counts growth*. Stats NZ. <https://www.stats.govt.nz/news/construction-industry-at-the-top-of-the-ladder-for-business-counts-growth>
- Reinartz, W., Krafft, M., & Hoyer, W. D. (2004). The customer relationship management process: Its measurement and impact on performance. *Journal of marketing research*, 41(3), 293-305. <https://doi.org/10.1509/jmkr.41.3.293.35991>
- Richard, P. J., Devinney, T. M., Yip, G. S., & Johnson, G. (2009). Measuring organizational performance: Towards methodological best practice. *Journal of Management*, 35(3), 718-804. <https://doi.org/10.1177/0149206308330560>
- Rigby, D., & Bilodeau, B. (2013). *Management Tools & Trends*. Boston, MA: Bain & Company.
- Robins, J. (2012). Partial-least squares. *Long Range Planning*, 5(45), 309-311.
- Robinson, H. S., Anumba, C. J., Carrillo, P. M., & Al-Ghassani, A. M. (2006). STEPS: A knowledge management maturity roadmap for corporate sustainability [Article]. *Business Process Management Journal*, 12(6), 793-808. <https://doi.org/10.1108/14637150610710936>
- Rudd, J. M., Greenley, G. E., Beatson, A. T., & Lings, I. N. (2008). Strategic planning and performance: Extending the debate [Article]. *Journal of Business Research*, 61(2), 99-108. <https://doi.org/10.1016/j.jbusres.2007.06.014>
- Rush, H., Bessant, J., & Hobday, M. (2007). Assessing the technological capabilities of firms: Developing a policy tool [Article]. *R and D Management*, 37(3), 221-236. <https://doi.org/10.1111/j.1467-9310.2007.00471.x>
- Russ, F. A., Mc Neilly, K. M., & Comer, J. M. (1996). Leadership, decision making and performance of sales managers: A multi-level approach [Article]. *Journal of Personal Selling and Sales Management*, 16(3), 1-15. <https://doi.org/10.1080/08853134.1996.10754060>
- Ryals, L. (2005). Making customer relationship management work: The measurement and profitable management of customer relationships. *Journal of marketing*, 69(4), 252-261. <https://doi.org/10.1509/jmkg.2005.69.4.252>
- Salim, M., & Yadav, R. (2012). Capital structure and firm performance: Evidence from Malaysian listed companies. *Procedia-Social and Behavioral Sciences*, 65, 156-166.
- Samee, K., & Pongpeng, J. (2012). Construction equipment selection: a common procedure. *Proceedings of the 2nd International Symposium on Technology for Sustainability (ISTS 2012)*,

- Scherer, F. M., & Ross, D. (1990). Industrial market structure and economic performance.
- Schuler, R. S., & Jackson, S. E. (1987). Linking competitive strategies with human resource management practices. *Academy of Management Perspectives*, 1(3), 207-219.
- Seelanatha, L. (2011). Determinants of firms' performance: Some Chinese evidence [Article]. *Investment Management and Financial Innovations*, 8(3), 28-38. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-81755169856&partnerID=40&md5=6789d4315ed8909a1fefc5f6dd0bb283>
- Seuring, S., & Müller, M. (2008). From a literature review to a conceptual framework for sustainable supply chain management [Article]. *Journal of cleaner production*, 16(15), 1699-1710. <https://doi.org/10.1016/j.jclepro.2008.04.020>
- Shah, N. (2011). Ethical issues in biomedical research and publication [Editorial]. *Journal of Conservative Dentistry*, 14(3), 205-207. <https://doi.org/10.4103/0972-0707.85787>
- Shamil, N. (2001). People & Organizational management in construction. *Editorial: ICE Publishing*, 64.
- Shi, Q., Ding, X., Zuo, J., & Zillante, G. (2016). Mobile Internet based construction supply chain management: A critical review. *Automation in Construction*, 72, 143-154.
- Shirazi, B., Langford, D. A., & Rowlinson, S. M. (1996). Organizational structures in the construction industry [Article]. *Construction management and economics*, 14(3), 199-212. <https://doi.org/10.1080/014461996373467>
- Shurrab, J., & Hussain, M. (2018). An empirical study of the impact of lean on the performance of the construction industry in UAE. *Journal of Engineering, Design and Technology*.
- Siddharthan, N. S., & Lall, S. (1982). The recent growth of the largest US multinationals. *Oxford bulletin of economics and statistics*, 44(1), 1-13.
- Sila, I., & Ebrahimpour, M. (2005). Critical linkages among TQM factors and business results [Article]. *International Journal of Operations and Production Management*, 25(11), 1123-1155. <https://doi.org/10.1108/01443570510626925>
- Sirgy, M. J. (2002). Measuring corporate performance by building on the stakeholders model of business ethics [Article]. *Journal of Business Ethics*, 35(3), 143-162. <https://doi.org/10.1023/A:1013856421897>
- Sivathaasan, N., Tharanika, R., Sinthuja, M., & Hanitha, V. (2013). Factors determining profitability: A study of selected manufacturing companies listed on Colombo Stock Exchange in Sri Lanka. *European Journal of Business and management*, 5(27), 99-107.
- Soetanto, R., Goodier, C., Austin, S., Dainty, A., & Price, A. (2007). Enhancing strategic planning in the UK construction industry. IN: Burt, G. Proceedings of 3rd International Conference on Organizational Foresight: Learning the Future Faster: University of Strathclyde, Glasgow, 16th August,

- Spanos, Y. E., Zaralis, G., & Lioukas, S. (2004). Strategy and industry effects on profitability: Evidence from Greece [Article]. *Strategic Management Journal*, 25(2), 139-165. <https://doi.org/10.1002/smj.369>
- Spencer, X. S. Y., Joiner, T. A., & Salmon, S. (2009). Differentiation strategy, performance measurement systems and organizational performance: Evidence from Australia. *International Journal of Business*, 14(1), 83.
- Srinivasan, R., & Moorman, C. (2005). Strategic firm commitments and rewards for customer relationship management in online retailing [Article]. *Journal of marketing*, 69(4), 193-200. <https://doi.org/10.1509/jmkg.2005.69.4.193>
- Stewart, R. A., Mohamed, S., & Daet, R. (2002). Strategic implementation of IT/IS projects in construction: A case study [Article]. *Automation in Construction*, 11(6), 681-694. [https://doi.org/10.1016/S0926-5805\(02\)00009-2](https://doi.org/10.1016/S0926-5805(02)00009-2)
- Stiles, J. (2003). A philosophical justification for a realist approach to strategic alliance research [Article]. *Qualitative Market Research: An International Journal*, 6(4), 263-271. <https://doi.org/10.1108/13522750310495346>
- Sun, J., Ding, L., & Gu, X. (2008). Empirical study on impact of information technology on construction firm performance. 2008 International Conference on Information Management, Innovation Management and Industrial Engineering,
- Sundin, O., & Johannisson, J. (2005). Pragmatism, neo-pragmatism and sociocultural theory: Communicative participation as a perspective in LIS [Review]. *Journal of Documentation*, 61(1 SPEC. ISS.), 23-43. <https://doi.org/10.1108/00220410510577998>
- Swailles, S. (2004). Commitment to change: Profiles of commitment and in-role performance. *Personnel Review*.
- Swamy, R. R. D., Tiwari, P., & Sawhney, A. (2018). Assessing determinants of PPP project performance: Applying AHP to urban drinking water sector in India. *Property Management*.
- Syverson, C. (2011). What determines productivity? *Journal of Economic literature*, 49(2), 326-365.
- Tabachnick, B. G., & Fidell, L. S. (2013). Using multivariate statistics: International edition. *Pearson* 2012.
- Tallman, S., & Li, J. (1996). Effects of international diversity and product diversity on the performance of multinational firms [Article]. *Academy of management journal*, 39(1), 179-196. <https://doi.org/10.2307/256635>
- Tam, W., & Le, K. N. (2006). Environmental assessment by power spectrum. Joint International Conference on Construction Culture, Innovations, and Management. Dubai, The British University in Dubai,

- Tan, Y., Shen, L., & Langston, C. (2012). Competition environment, strategy, and performance in the Hong Kong construction industry [Review]. *Journal of Construction Engineering and Management*, 138(3), 352-360. [https://doi.org/10.1061/\(ASCE\)CO.1943-7862.0000407](https://doi.org/10.1061/(ASCE)CO.1943-7862.0000407)
- Tarhan, A., Turetken, O., & Reijers, H. A. (2016). Business process maturity models: A systematic literature review [Article]. *Information and Software Technology*, 75, 122-134. <https://doi.org/10.1016/j.infsof.2016.01.010>
- Tashakkori, A., & Teddlie, C. (2003). Issues and dilemmas in teaching research methods courses in social and behavioural sciences: US perspective. *International journal of social research methodology*, 6(1), 61-77.
- Tashakkori, A., & Teddlie, C. (2011). Mixed methods research: Contemporary issues in an emerging field. *The SAGE handbook of qualitative research*, 4.
- Tashakkori, A., Teddlie, C., & Teddlie, C. B. (1998). *Mixed methodology: Combining qualitative and quantitative approaches* (Vol. 46). sage.
- Teece, D. J. (2007). Explicating dynamic capabilities: the nature and microfoundations of (sustainable) enterprise performance. *Strategic Management Journal*, 28(13), 1319-1350.
- Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, 18(7), 509-533.
- Teeratansirikool, L., Siengthai, S., Badir, Y., & Charoenngam, C. (2013). Competitive strategies and firm performance: The mediating role of performance measurement [Article]. *International Journal of Productivity and Performance Management*, 62(2), 168-184. <https://doi.org/10.1108/17410401311295722>
- Thompson, J. D. (1967). *Organizations in action*. New York: McGraw-Hill.
- Ting, H.-F., Wang, H.-B., & Wang, D.-S. (2012). The moderating role of environmental dynamism on the influence of innovation strategy and firm performance. *International Journal of innovation, management and technology*, 3(5), 517.
- Tripathi, K. K., & Jha, K. N. (2018). Determining Success Factors for a Construction Organization: A Structural Equation Modeling Approach [Article]. *Journal of Management in Engineering*, 34(1), Article 04017050. [https://doi.org/10.1061/\(ASCE\)ME.1943-5479.0000569](https://doi.org/10.1061/(ASCE)ME.1943-5479.0000569)
- Tsai, C. C., & Lydia Wen, M. (2005). Research and trends in science education from 1998 to 2002: A content analysis of publication in selected journals. *International journal of science education*, 27(1), 3-14.
- Tung, R. L. (1979). Dimensions of organizational environments: An exploratory study of their impact on organization structure. *Academy of management journal*, 22(4), 672-693.

- Venegas C, P., & Alarcón C, L. F. (1997). Selecting long-term strategies for construction firms [Article]. *Journal of Construction Engineering and Management*, 123(4), 388-398. [https://doi.org/10.1061/\(ASCE\)0733-9364\(1997\)123:4\(388\)](https://doi.org/10.1061/(ASCE)0733-9364(1997)123:4(388))
- Venkatraman, N., & Ramanujam, V. (1986). Measurement of business performance in strategy research: A comparison of approaches. *Academy of management review*, 11(4), 801-814. <https://doi.org/https://doi.org/10.5465/amr.1986.4283976>
- Venkatraman, N., & Ramanujam, V. (1987). Planning system success: a conceptualization and an operational model. *Management science*, 33(6), 687-705. <https://doi.org/https://doi.org/10.1287/mnsc.33.6.687>
- Verhoef, P. C., & Langerak, F. (2002). Eleven misconceptions about customer relationship management. *Business Strategy Review*, 13(4), 70-76. <https://doi.org/10.1111/1467-8616.00235>
- Veronika, A., Riantini, L. S., & Firmansyah, B. A. (2008). Identification of the factors in corporate management that influence construction company's performance in Indonesia. Proceedings of the 4th International Structural Engineering and Construction Conference, ISEC-4 - Innovations in Structural Engineering and Construction,
- Virgiyanti, W., Tufail, M. A., & Bakar, A. H. A. (2019). Intervention of organizational culture in achieving competitive advantage through knowledge management in Malaysian construction companies [Article]. *International Journal of Innovative Technology and Exploring Engineering*, 8(8), 204-214. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85069828073&partnerID=40&md5=0bfc0663c7e646c4e2557b82ebeafd58>
- Vukomanovic, M., Radujkovic, M., & Nahod, M. M. (2014). EFQM excellence model as the TQM model of the construction industry of southeastern Europe. *Journal of Civil Engineering and Management*, 20(1), 70-81.
- Walker, A. (2015). *Project management in construction*. John Wiley & Sons.
- Wang, T., Tang, W., Du, L., Duffield, C. F., & Wei, Y. (2016). Relationships among Risk Management, Partnering, and Contractor Capability in International EPC Project Delivery [Article]. *Journal of Management in Engineering*, 32(6), Article 04016017. [https://doi.org/10.1061/\(ASCE\)ME.1943-5479.0000459](https://doi.org/10.1061/(ASCE)ME.1943-5479.0000459)
- Wang, X., & Huang, J. (2006). The relationships between key stakeholders' project performance and project success: Perceptions of Chinese construction supervising engineers. *International Journal of Project Management*, 24(3), 253-260.
- Ward, P. T., Bickford, D. J., & Leong, G. K. (1996). Configurations of manufacturing strategy, business strategy, environment and structure. *Journal of Management*, 22(4), 597-626. [https://doi.org/10.1016/S0149-2063\(96\)90026-4](https://doi.org/10.1016/S0149-2063(96)90026-4)
- Wheelen, T. L., & Hunger, J. D. (2002). Strategic Management and Business Policy, Eight Edition. In: Pearson Education, New Jersey.

- White, M. A., & Bruton, G. D. (2010). *The management of technology and innovation: A strategic approach*. Cengage Learning.
- Wicks, A. C., & Freeman, R. E. (1998). Organization Studies and the New Pragmatism: Positivism, Anti-positivism, and the Search for Ethics [Article]. *Organization Science*, 9(2), 123-140. <https://doi.org/10.1287/orsc.9.2.123>
- Widyanty, W., Daito, A., Riyanto, S., & Nusraningrum, D. (2020). Gaining a competitive advantage through strategic human resource management in Indonesian construction industry. *Management Science Letters*, 10(9), 2021-2028.
- Wilden, R., Gudergan, S. P., Nielsen, B. B., & Lings, I. (2013). Dynamic Capabilities and Performance: Strategy, Structure and Environment [Article]. *Long Range Planning*, 46(1-2), 72-96. <https://doi.org/10.1016/j.lrp.2012.12.001>
- Windapo, A. O., & Cattell, K. (2013). The South African construction industry: Perceptions of key challenges facing its performance, development and growth [Article]. *Journal of Construction in Developing Countries*, 18(2), 65-79. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-84974809099&partnerID=40&md5=65226a12f4fbda8eebc0d51742ea7290>
- Winter, S. G. (2003). Understanding dynamic capabilities. *Strategic Management Journal*, 24(10), 991-995.
- Wong, P. S. P., Demertjis, M., Hardie, M., & Lo, C. Y. (2015). The effect of unlearning on organisational learning behaviour and performance in construction contracting organisations [Article]. *International Journal of Project Organisation and Management*, 6(3), 197-214. <https://doi.org/10.1504/IJPOM.2014.065256>
- Wong, P. S. P., & Lam, K. Y. (2012). Facing turbulence: Driving force for construction organizations to regain unlearning and learning traction [Article]. *Journal of Construction Engineering and Management*, 138(10), 1202-1211. [https://doi.org/10.1061/\(ASCE\)CO.1943-7862.0000523](https://doi.org/10.1061/(ASCE)CO.1943-7862.0000523)
- Wruck, K. H., & Jensen, M. C. (1994). Science, specific knowledge, and total quality management [Article]. *Journal of Accounting and Economics*, 18(3), 247-287. [https://doi.org/10.1016/0165-4101\(94\)90023-X](https://doi.org/10.1016/0165-4101(94)90023-X)
- Wu, D. (2009). Measuring performance in small and medium enterprises in the information & communication technology industries. *RMIT University Thesis*.
- Wuttke, D. A., Blome, C., Foerstl, K., & Henke, M. (2013). Managing the innovation adoption of supply chain finance - Empirical evidence from six european case studies [Article]. *Journal of Business Logistics*, 34(2), 148-166. <https://doi.org/10.1111/jbl.12016>
- Yamin, S., Gunasekaran, A., & Mavondo, F. T. (1999). Relationship between generic strategies, competitive advantage and organizational performance: An empirical analysis [Article]. *Technovation*, 19(8), 507-518. [https://doi.org/10.1016/S0166-4972\(99\)00024-3](https://doi.org/10.1016/S0166-4972(99)00024-3)

- Yang, H., Yeung, J. F. Y., Chan, A. P. C., Chiang, Y. H., & Chan, D. W. M. (2010). A critical review of performance measurement in construction [Article]. *Journal of Facilities Management*, 8(4), 269-284. <https://doi.org/10.1108/14725961011078981>
- Yesil, S., & Kaya, A. (2013). The effect of organizational culture on firm financial performance: Evidence from a developing country. *Procedia-Social and Behavioral Sciences*, 81, 428-437. <https://doi.org/10.1016/j.sbspro.2013.06.455>
- Yusof, N., Zainul Abidin, N., Zailani, S. H. M., Govindan, K., & Iranmanesh, M. (2016). Linking the environmental practice of construction firms and the environmental behaviour of practitioners in construction projects [Article]. *Journal of cleaner production*, 121, 64-71. <https://doi.org/10.1016/j.jclepro.2016.01.090>
- Zahra, S. A., Ireland, R. D., & Hitt, M. A. (2000). International expansion by new venture firms: International diversity, mode of market entry, technological learning, and performance. *Academy of management journal*, 43(5), 925-950. <https://doi.org/10.5465/1556420>
- Zhai, X., Liu, A. M. M., & Fellows, R. (2014). Role of human resource practices in enhancing organizational learning in chinese construction organizations [Article]. *Journal of Management in Engineering*, 30(2), 194-204. [https://doi.org/10.1061/\(ASCE\)ME.1943-5479.0000207](https://doi.org/10.1061/(ASCE)ME.1943-5479.0000207)
- Zhang, N., Deng, X., Zhao, X., & Chang, T. (2019). Exploring the sources of contractors' competitive advantage on international HSR construction projects. *International Journal of Civil Engineering*, 17(7), 1115-1129.

Glossary

AVE	Average Variance Extracted
BSC	Balanced Scorecard
CFA	Component Factor Analysis
CFP	Corporate Financial Performance
CR	Composite Reliability
CRM	Customer Relationship Management
CSP	Corporate Social Performance
CSR	Corporate Social Responsibility
DC	Dynamic Capability
EFQM	European Foundation for Quality Management
GDP	Gross Domestic Product
HTMT	Heterotrait-monotrait
IO	Industrial Organisation
ISQ	Information System Quality
KMO	Kaiser-Meyer-Olkin
KPI	Key Performance Indicators
MSA	Measuring Sampling Adequacy
PCA	Principal Component Analysis
PLS	Partial Least Square
PLS-SEM	Partial Least Square Structural Equation Modeling

RBV	Resource Based View
RII	Relative Importance Index
ROA	Return on Asset
ROCE	Return on Capital Employed
ROE	Return on Equity
SLR	Systematic Literature Review
SP	Sustainable Practices
SWOT	Strength, Weakness, Opportunity, and Threat
TQM	Total Quality Management
WLB	Work-Life Balance

Appendix A: Ethics Approvals and Documents

Ethics Approval (for 1st Questionnaire)

Auckland University of Technology Ethics Committee (AUTEC)

Auckland University of Technology

D-88, Private Bag 92006, Auckland 1142, NZ

T: +64 9 921 9999 ext. 8316

E: ethics@aut.ac.nz

www.aut.ac.nz/researchethics

9 May 2019

Mani Poshdar

Faculty of Design and Creative Technologies

Dear Mani

Ethics Application: **19/154 The interaction between the main determinants of organisational performance in New Zealand**

Thank you for submitting your application for ethical review. I am pleased to advise that a subcommittee of the Auckland University of Technology Ethics Committee (AUTEC) approved your ethics application, in stages and subject to the following conditions:

1. Preparation of the survey using the electronic format that participant will use. This should include the information included as part of the Information Sheet at the beginning. The committee observes that the definitions should be presented before the questions;
2. Amendment of the Information Sheet as follows:
 - a. please explain something about the aims and methods of the whole research project, including that there will be a second survey. Clarify how participants for this second survey will be identified;
 - b. Amend the withdrawal statement to match the impossibility of withdrawing data from an anonymous survey;
 - c. Please limit the number of reminders about the survey to the potential sample to one only.

This approval is for the questionnaire stage of the research. Full information about future stages of this research needs to be provided to and approved by AUTECH before the data collection for those stages commences.

Please provide me with a response to the points raised in these conditions, indicating either how you have satisfied these points or proposing an alternative approach. AUTECH also requires copies of any altered documents, such as Information Sheets, surveys etc. You are not required to resubmit the application form again. Any changes to responses in the form required by the committee in their conditions may be included in a supporting memorandum.

Please note that the Committee is always willing to discuss with applicants the points that have been made. There may be information that has not been made available to the Committee, or aspects of the research may not have been fully understood.

Once your response is received and confirmed as satisfying the Committee's points, you will be notified of the full approval of your ethics application. Full approval is not effective until all the conditions have been met. Data collection may not commence until full approval has been confirmed. If these conditions are not met within six months, your application may be closed and a new application will be required if you wish to continue with this research.

To enable us to provide you with efficient service, we ask that you use the application number and study title in all correspondence with us. If you have any enquiries about this application, or anything else, please do contact us at ethics@aut.ac.nz.

I look forward to hearing from you,

Yours sincerely



Kate O'Connor

Executive Manager

Auckland University of Technology Ethics Committee

Cc: hamzah.alqudah@aut.ac.nz

Ethics Approval (for 2nd Questionnaire)

Auckland University of Technology Ethics Committee (AUTEC)

Auckland University of Technology

D-88, Private Bag 92006, Auckland 1142, NZ

T: +64 9 921 9999 ext. 8316

E: ethics@aut.ac.nz

www.aut.ac.nz/researchethics

10 June 2020

Mani Poshdar

Faculty of Design and Creative Technologies

Dear Mani

Re Ethics Application: **20/104 The interaction between the main determinants of construction organisational performance in New Zealand**

Thank you for providing evidence as requested, which satisfies the points raised by the Auckland University of Technology Ethics Committee (AUTEC).

Your ethics application has been approved for three years until 9 June 2023.

Standard Conditions of Approval

1. The research is to be undertaken in accordance with the [Auckland University of Technology Code of Conduct for Research](#) and as approved by AUTEC in this application.
2. A progress report is due annually on the anniversary of the approval date, using the EA2 form.
3. A final report is due at the expiration of the approval period, or, upon completion of project, using the EA3 form.
4. Any amendments to the project must be approved by AUTEC prior to being implemented. Amendments can be requested using the EA2 form.
5. Any serious or unexpected adverse events must be reported to AUTEC Secretariat as a matter of priority.
6. Any unforeseen events that might affect continued ethical acceptability of the project should also be reported to the AUTEC Secretariat as a matter of priority.
7. It is your responsibility to ensure that the spelling and grammar of documents being provided to participants or external organisations is of a high standard and that all the dates on the documents are updated.

AUTEC grants ethical approval only. You are responsible for obtaining management approval for access for your research from any institution or organisation at which your research is being conducted and you need to meet all ethical, legal, public health, and locality obligations or requirements for the jurisdictions in which the research is being undertaken.

Please quote the application number and title on all future correspondence related to this project.

For any enquiries please contact ethics@aut.ac.nz. The forms mentioned above are available online through <http://www.aut.ac.nz/research/researchethics>

(This is a computer-generated letter for which no signature is required)

The AUTEK Secretariat

Auckland University of Technology Ethics Committee

Cc: hamzah.alqudah@aut.ac.nz

Ethics Approval (for Interviews)

Auckland University of Technology Ethics Committee (AUTEC)

Auckland University of Technology

D-88, Private Bag 92006, Auckland 1142, NZ

T: +64 9 921 9999 ext. 8316

E: ethics@aut.ac.nz

www.aut.ac.nz/researchethics

12 April 2021

Mani Poshdar

Faculty of Design and Creative Technologies

Dear Mani

Re Ethics Application: **20/104 The interaction between the main determinants of construction organisational performance in New Zealand**

Thank you for providing evidence as requested, which satisfies the points raised by the Auckland University of Technology Ethics Committee (AUTEC).

The interview phase of the research has been approved for three years until 12 April 2024.

Non-Standard Conditions of Approval

1. Please provide PLS model once developed.

Non-standard conditions must be completed before commencing your study. Non-standard conditions do not need to be submitted to or reviewed by AUTEC before commencing your study.

Standard Conditions of Approval

8. The research is to be undertaken in accordance with the [Auckland University of Technology Code of Conduct for Research](#) and as approved by AUTEC in this application.
9. A progress report is due annually on the anniversary of the approval date, using the EA2 form.
10. A final report is due at the expiration of the approval period, or, upon completion of project, using the EA3 form.
11. Any amendments to the project must be approved by AUTEC prior to being implemented. Amendments can be requested using the EA2 form.
12. Any serious or unexpected adverse events must be reported to AUTEC Secretariat as a matter of priority.

13. Any unforeseen events that might affect continued ethical acceptability of the project should also be reported to the AUTECH Secretariat as a matter of priority.
14. It is your responsibility to ensure that the spelling and grammar of documents being provided to participants or external organisations is of a high standard and that all the dates on the documents are updated.

AUTECH grants ethical approval only. You are responsible for obtaining management approval for access for your research from any institution or organisation at which your research is being conducted and you need to meet all ethical, legal, public health, and locality obligations or requirements for the jurisdictions in which the research is being undertaken.

Please quote the application number and title on all future correspondence related to this project.

For any enquiries please contact ethics@aut.ac.nz. The forms mentioned above are available online through <http://www.aut.ac.nz/research/researchethics>

(This is a computer-generated letter for which no signature is required)

The AUTECH Secretariat

Auckland University of Technology Ethics Committee

Cc: hamzah.alqudah@aut.ac.nz

Appendix B: Consent Form (for Interview)

Project title: ***The interaction between the main determinants of construction organisational performance in New Zealand***

Project Supervisor: ***Dr. Mani Poshdar***

Researcher: ***Hamzah E. Alqudah***

- ☐ I have read and understood the information provided about this research project in the Information Sheet dated 22 February 2021.
- ☐ I have had an opportunity to ask questions and to have them answered.
- ☐ I understand that notes will be taken during the interviews and that they will also be audio-taped and transcribed.
- ☐ I understand that taking part in this study is voluntary (my choice) and that I may withdraw from the study at any time without being disadvantaged in any way.
- ☐ I understand that if I withdraw from the study then I will be offered the choice between having any data that is identifiable as belonging to me removed or allowing it to continue to be used. However, once the findings have been produced, removal of my data may not be possible.
- ☐ I agree to take part in this research.
- ☐ I wish to receive a summary of the research findings (please tick one): Yes ☐
No ☐

Participant's signature :

.....

Participant's name:

.....

Participant's Contact Details (if appropriate):

.....

.....

.....

.....

Date:

Approved by the Auckland University of Technology Ethics Committee on 12th April 2021

AUTEC Reference number 20\104

Note: The Participant should retain a copy of this form.

Participant Information Sheet: 1st Questionnaire

Date Information Sheet Produced:

29th March 2019

Project Title

The interaction between the main determinants of organisational performance in New Zealand

An Invitation

My name is Hamzah Alqudah, I am a PhD candidate at AUT University. I invite you to participate in this research in developing a system dynamic model for the determinants of the construction organisational performance. This research will form the basis of my research project.

What is the purpose of this research?

This research aims to investigate how the interaction between the organisational performance determinants affects the organisational performance in the New Zealand construction industry. It will first review and analyse all the determinants of the organisational performance and identify the ones that affect New Zealand construction organisations. A second data collection (Questionnaire) will be held after the result of this round. In the second questionnaire, the participants will be chosen based on their work experience, position and the size of the companies they will be working in.

A deeper understanding on the determinants of the organisational performance is expected so that the issues can be approached properly in order to unlock possibilities to improve the organisational overall performance. The result of this research will contribute to the body of knowledge regarding the organisational performance determinants and construction small to medium enterprises (SMEs) and about how the organisational performance determinants can be managed. The outcome of this research will be used for conferences, journal publications and PhD thesis.

How was I identified and why am I being invited to participate in this research?

Reading through public websites is the first step to identify the involved organisations. Your roles and duties will be reflected in the job titles. Thus, the participants in this research are managers, CEOs and senior engineers in the New Zealand construction industry.

How do I agree to participate in this research?

Completion of the questionnaire survey online within three weeks will indicate your consent to participant.

Your participation in this research is voluntary (it is your choice) and whether or not you choose to participate will neither advantage nor disadvantage you. You cannot withdraw

your responses from the study at any time after completing the questionnaire because it will be totally anonymous.

What will happen in this research?

If you agree to participate in this research, I will invite you to participate in this questionnaire survey, and it will take you approximately 20 minutes to complete. The questions will ask you about your judgments on the determinants of the organisational performance.

What are the discomforts and risks?

We do not foresee any risks or discomforts in participation since your identity will remain anonymous.

Participants are not required to divulge any personal feeling about their work or their organisation and therefore there should be no emotional or psychological risks to the participants in this research. Participants' privacy and confidentiality are assured as the questionnaire is anonymous and no personal information is sought that may divulge a participant's identity. Any reporting of findings will have no names or details of demographics that will permit identification of participants.

How will these discomforts and risks be alleviated?

It is most unlikely that any discomfort of any type will be felt since the research involved is the discussion of professional practice within a professional organisation by recognised professionals in their field. Consequently, given that anonymity can be guaranteed using the survey explained, there is minimal likelihood of discomfort. At any time during the survey, you may choose not to answer questions if you find discomfort.

What are the benefits?

There is probably no benefit to you in participating. However, the findings of the research may provide some benefit for you or for your organisation at a later date.

How will my privacy be protected?

All information collected from you will be kept strictly confidential. The collected questionnaire will be downloaded to an external hard drive and securely stored. Only the researcher team have access to them. None of your personal information will be disclosed to any third parties or in any part of this research output (Journal articles, conference papers and thesis).

What are the costs of participating in this research?

There is no financial cost involved in participating in this research. The only cost of participating is the time given to answer the questions.

What opportunity do I have to consider this invitation?

Your participation is voluntary. It is up to you to decide whether or not to take a part. You will be given the maximum three weeks to fill out the survey.

Will I receive feedback on the results of this research?

You may not directly get the feedback as the questionnaire is anonymous. Please feel free to contact the research team if you would like a summary of the result of the questionnaires.

What do I do if I have concerns about this research?

Any Concerns regarding the conduct of the project should be notified to the primer researcher,

Hamzah Alqudah (email: hamzah.alqudah@aut.ac.nz or Mobile: 02108197660).

Or the project supervisor Dr. Mani Poshdar (email: many.poshdar@aut.ac.nz or telephone: 099219999 ext. 8956).

Concerns regarding the conduct of the research should be notified to the Executive Secretary of AUTECH, Kate O'Conner, ethics@aut.ac.nz, 099219999 ext. 6038)

Whom do I contact for further information about this research?

Please keep this Information Sheet for your future reference. You are also able to contact the research team as follows:

Researcher Contact Details:

Hamzah Alqudah (email: hamzah.alqudah@aut.ac.nz).

Project Supervisor Contact Details:

Dr. Mani Poshdar (email: many.poshdar@aut.ac.nz or telephone: 099219999 ext. 8956).

Approved by the Auckland University of Technology Ethics Committee on 9 May 2019, AUTECH Reference number 19\154

Participant Information Sheet: 2nd Questionnaire

Date Information Sheet Produced:

17th April 2020

Project Title

The interaction between the main determinants of organisational performance in New Zealand

An Invitation

My name is Hamzah Alqudah, I am a PhD candidate at AUT University. I invite you to participate in this research in developing a system dynamic model for the determinants of the construction organisational performance. This research will form the basis of my research project.

What is the purpose of this research?

This research aims to investigate how the interaction between the organisational performance determinants affects the organisational performance in the New Zealand construction industry. It will first review and analyse all the determinants of the organisational performance and identify the ones affecting New Zealand construction organisation. A deeper understanding on the determinants of the organisational performance is expected so that the issues can be approached properly in order to unlock possibilities to improve the organisational overall performance. The result of this research will contribute to the body of knowledge regarding the organisational performance determinants and construction small to medium enterprises (SMEs) and about how the organisational performance determinants can be managed. The outcome of this research will be used for conferences, journal publications and PhD thesis.

How was I identified and why am I being invited to participate in this research?

Reading through public websites is the first step to identify the involved organisations. Your roles and duties will be reflected in the job titles. Thus, the participants in this research are managers, CEOs and senior engineers in the New Zealand construction industry. You have been invited as one of the aforementioned participants.

How do I agree to participate in this research?

Completion of the questionnaire survey online (no reply by email) within three weeks will indicate your consent to participant.

You can complete the questionnaire using your smart phone or your laptop\PC by simply following this link:

https://aut.au1.qualtrics.com/jfe/form/SV_0wEYZknV3ZBzkII

Your participation in this research is voluntary (it is your choice) and whether or not you choose to participate will neither advantage nor disadvantage you. You are able to withdraw from the study at any time. If you choose to withdraw from the study, then you will be offered the choice between having any data that is identifiable as belonging to you removed or allowing it to continue to be used. However, once the findings have been produced, removal of your data may not be possible.

What will happen in this research?

If you agree to participate in this research, you will be invited you to participate in this questionnaire, and it will take you approximately 30 minutes to complete. The researcher will ask you questions on your opinions on the determinants of the organisational performance and their effects on the organisational performance. You will use A 5-point Likert scale to indicate your opinion on that effect.

What are the discomforts and risks?

Nothing seems to be risky or causing discomforts since your identity will remain confidential.

Participants are not required to divulge any personal feeling about their work of their organisation and therefore there should be no emotional or psychological risks to the participants in this research. Participants' privacy and confidentiality are assured as the questionnaire is anonymous and no personal information is sought that may divulge a participant's identity. Any reporting of finding will have no names or details of demographics that will permit identification of participants.

How will these discomforts and risks be alleviated?

It is most unlikely that any discomfort of any type will be felt since the research involved is the discussion of professional practice within a professional organisation by recognised professionals in their field. Consequently, given that anonymity can be guaranteed using the survey explained, there is minimal likelihood of discomfort. At any time during the survey, you may choose not to answer questions if you find discomfort.

What are the benefits?

There is probably no benefit in participating. However, the finding of the research may provide some benefit for you or for your organisation.

How will my privacy be protected?

None of your personal information will be required. However, all information collected from you will be kept strictly confidential. The collected questionnaire surveys will be to an external hard drive and securely stored. Only the researcher team have access to them.

What are the costs of participating in this research?

There is no financial cost involved in participating in this research. The only cost of participating is the time given to answer the questions.

What opportunity do I have to consider this invitation?

Your participation is voluntary. It is up to you to decide whether or not to take a part. You will be given the maximum three weeks to fill out the survey.

Will I receive feedback on the results of this research?

You may not directly get the feedback as the survey is anonymous. Please feel free to contact the research team if you require further information about the survey. Or follow the following link to re-direct you to the summery of the findings:

https://aut.auckland.ac.nz/qualtrics.com/jfe/form/SV_abYOwQuXUBrSJct

What do I do if I have concerns about this research?

Any concerns regarding the nature of this project should be notified in the first instance to the Project Supervisor: Dr. Mani Poshdar (email: many.poshdar@aut.ac.nz or telephone: 099219999 ext. 8956).

Concerns regarding the conduct of the research should be notified to the Executive Secretary of AUTECH, ethics@aut.ac.nz, (+649) 921 9999 ext 6038.

Whom do I contact for further information about this research?

Please keep this Information Sheet for your future reference. You are also able to contact the research team as follows:

Researcher Contact Details:

Hamzah Alqudah (email: hamzah.alqudah@aut.ac.nz).

Project Supervisor Contact Details:

Dr. Mani Poshdar (email: many.poshdar@aut.ac.nz or telephone: 099219999 ext. 8956).

Approved by the Auckland University of Technology Ethics Committee on 10 June 2020, AUTECH Reference number 20\104.

Participant Information Sheet: Interview

Date Information Sheet Produced:

22nd February 2021

Project Title

The interaction between the main determinants of construction organisational performance in New Zealand

An Invitation

My name is Hamzah Alqudah, I am a PhD candidate at AUT University. I invite you to participate in this research in validating a Partial-Lean Square (PLS) model for the determinants of the construction organisational performance. This research will form the basis of my research project.

What is the purpose of this research?

This research aims to understand and model how the main identified determinants affect the organisational performance in the New Zealand construction industry. It will first review and analyse all the determinants of the organisational performance and identify the ones that affect New Zealand construction organisations.

A deeper understanding on the determinants of the organisational performance is expected so that the issues can be approached properly in order to unlock possibilities to improve the organisational overall performance. The result of this research will contribute to the body of knowledge regarding the organisational performance determinants and construction organisations and about how the organisational performance determinants can be managed. The outcome of this research will be used for conferences, journal publications and PhD thesis.

How was I identified and why am I being invited to participate in this research?

Reading through public websites is the first step to identify the involved participants. Your roles and duties will be reflected in the job titles. Thus, the participants in this research are managers, CEOs, senior engineers or any decision makers in the New Zealand construction industry.

How do I agree to participate in this research?

Signing the consent form and send it back to me within three weeks will indicate your consent to participant.

Your participation in this research is voluntary (it is your choice) and whether or not you choose to participate will neither advantage nor disadvantage you. You are able to withdraw from the study at any time. If you choose to withdraw from the study, then you will be offered the choice between having any data that is identifiable as belonging to you removed or allowing it to continue to be used. However, once the findings have been produced, removal of your data may not be possible.

What will happen in this research?

If you agree to participate in this research, I will invite you to participate in this interview (via Zoom, Microsoft Team or any other platforms you find suitable for you), and it will take approximately 20 minutes of your time. The questions will ask you about your opinion on the effect of the determinants on the organisational performance as resulted in this study. The virtual meeting will be recorded for analysing your answers later by the research team.

What are the discomforts and risks?

We do not foresee any risks or discomforts in participation since your identity will remain confidential.

Participants are not required to divulge any personal feeling about their work of their organisation and therefore there should be no emotional or psychological risks to the participants in this research. Participants' privacy and confidentiality are assured, and no personal information is sought that may divulge a participant's identity. Any reporting of finding will have no names or details of demographics that will permit identification of participants.

How will these discomforts and risks be alleviated?

It is most unlikely that any discomfort of any type will be felt since the research involved is the discussion of professional practice within a professional organisation by recognised professionals in their field. At any time during the interview, you may choose not to answer questions if you find discomfort.

What are the benefits?

There is probably no benefit to you in participating. However, the findings of the research may provide some benefit for you or for your organisation at a later date.

How will my privacy be protected?

All information collected from you will be kept strictly confidential. The collected information will be downloaded to an external hard drive and securely stored. Only the researcher team have access to them. None of your personal information will be disclosed to any third parties or in any part of this research output (Journal articles, conference papers and thesis).

What are the costs of participating in this research?

There is no financial cost involved in participating in this research. The only cost of participating is the time given to answer the questions and providing your opinion.

What opportunity do I have to consider this invitation?

Your participation is voluntary. It is up to you to decide whether or not to take a part. You will be given the maximum three weeks to sign the consent form and send it back to me with your preferable date and time for the interview.

Will I receive feedback on the results of this research?

All participants are entitled to get feedback from this study. A summary of research findings and discussions will be provided by email if requested.

What do I do if I have concerns about this research?

Any concerns regarding the nature of this project should be notified in the first instance to the Project Supervisor, Dr. Mani Poshdar (email: many.poshdar@aut.ac.nz or telephone: 099219999 ext. 8956).

Concerns regarding the conduct of the research should be notified to the Executive Secretary of AUTECH, ethics@aut.ac.nz, (+649) 921 9999 ext 6038.

Whom do I contact for further information about this research?

Please keep this Information Sheet and a copy of the Consent Form for your future reference. You are also able to contact the research team as follows:

Researcher Contact Details:

Hamzah Alqudah (email: hamzah.alqudah@aut.ac.nz).

Project Supervisor Contact Details:

Dr. Mani Poshdar (email: many.poshdar@aut.ac.nz or telephone: 099219999 ext. 8956).

Approved by the Auckland University of Technology Ethics Committee on 12 April 2021, AUTECH Reference number 20\104.

1st Questionnaire



Auckland University of Technology

Department of Built Environment Engineering

School of engineering, computer, and mathematical sciences

March 2019

Dear Madam\sir,

This questionnaire is part of PhD (Built Environment engineering) research project that is underway to investigate the interaction between the main determinants of organisational performance in New Zealand.

This phase of the research process is aimed at specifying the determinants of organisational performance of construction business in New Zealand. The questionnaire can be completed in approximately 15 minutes.

You are free to add or make further comments that will assist the research. The information provided by you will be treated in the strictest confidence.

Should you have any question(s) or would like further information, please do not hesitate to contact me on 02108197661 or email me at hamzah.alqudah@aut.ac.nz

Thank you for your participation.

Mr. Hamzah Alqudah

(PhD candidate)

Dr. Mani Poshdar

(Supervisor)

By completing this questionnaire, you are consented to participate in this research

Part 1. Background Information

1. Your position in the company
2. How many year(s) have you worked in this position?
3. How many years have you worked in the NZ construction industry?
.....
4. How do you define the size of organisation you have had the majority of your experience?
☐ Less than 20 ☐ 20-50 employees ☐ More than 50

Part 2. Organisational performance determinants

Please “tick” as appropriate to indicate the level of effect of the determinants on the organisational performance in the New Zealand construction industry using the following scale significance of impact; **No effect**= no effect on the overall organisational performance, **low effect**= low effect on the organisational performance, **moderate effect**= moderate effect on the organisational performance, **high effect**= high effect on the organisational performance, **very high effect**= very high effect on the organisational performance.

No effect	Low effect	Moderate effect	High effect	Very high effect
1	2	3	4	5

	Performance determinants	Impact				
		1	2	3	4	5
1	Competitive Strategies (CS)					
2	Organisational Characteristics (OCH)					
3	Resources and Capabilities (RC)					
4	Strategic Management (SM)					
5	Diversification and Internationalisation (DI)					
6	Total Quality Management (TQM)					
7	Organisational Learning (OL)					
8	Environmental Factors (EF)					
9	Organisational Culture (OCL)					
10	Knowledge Management (KM)					
11	Innovation (INN)					
12	Information Technology (IT)					
13	Human Resource Management (HRM)					
14	Procurement Process Coordination (PPC)					
15	Marketing Resource Management (MRM)					
16	Factors of Corporate Management (FCM)					
17	Customer relationship Management (CRM)					
18	Construction Equipment Selection Factors (CESF)					

1. Please list any other determinates that can affect the organisational performance in New Zealand:

-
-

Thank you very much for your time!

2nd Questionnaire

Auckland University of Technology

Department of Built Environment Engineering

School of Future Environment

April 2020



Dear Madam\sir,

This questionnaire is part of a PhD (Built Environment engineering) research project that is underway to investigate the interaction between the main determinants of organisational performance in New Zealand.

This phase of the research process is aimed at finding the relationship between the determinants of organisational performance and the overall organisational performance of the construction industry in New Zealand. The questionnaire can be completed in approximately 30 minutes.

You are free to add or make further comments that will assist the research. The information provided by you will be treated in the strictest confidence.

Should you have any question(s) or would like further information, please do not hesitate to contact me on 02108197661 or email me at hamzah.alqudah@aut.ac.nz

Thank you for your participation.

Mr. Hamzah Alqudah

(PhD candidate)

Dr. Mani Poshdar

(Supervisor)

By completing this questionnaire, you are consented to participate in this research

General Information

Q1: Years of organisational existence

☐ 1-5

☐ 6-10

☐ >10

Q2: Number of Employees in your organisation

☐ Less than 20 employees

☐ 20 - 50 employees

☐ More than 50 employees

Organisational Characteristics

Q3: Please (Tick) as appropriate to indicate your assessment of the level of impact of the following organisational characteristics and their effects on organisational performance considering your experience in the organisation using the following scale significance of Impact.

Very low	Low	Moderate	High	Very High
1	2	3	4	5

<i>Q3.1: Organisational Structure</i>	1	2	3	4	5
Management controls how individual employee works, or activities are spelt out					
Managers ensure integration & coordination of individual employee activities and align them to the company's strategies					
The nature of the organisational structure encourages improving the strategy and delegation of authorities					
<i>Q3.2: Management Style</i>	1	2	3	4	5
Management makes decisions in the best interest of employee after consultation					
Employees and Managers present ideas, ask questions, listen, and provide feedback					
Management recognises and rewards efficiency, excellence, openness, social skill, and contribution to decisions					
Employees tend to more committed to goals when they are set by the management					
<i>Q3.3: Decision-making Style</i>	1	2	3	4	5
Managers encourage employees to focus on the key techniques, show independence and initiative in solving a problem (directive)					
Management encourages analytic ideas and welcome an alternative approach to the problem-solving (analytical)					
Managers strengthen creative and encourage independent action (conceptual)					
Managers are aware of socio-cultural attitudes of the employee, and they are being guided towards meaningful problem-solving strategies to create enabling environment (Behavioural)					

Q3.4 Evaluate your organisation's overall performance with respect to the effect of “Organisational Characteristics”

- ☐ Very High
- ☐ High
- ☐ Moderate
- ☐ Low
- ☐ Very Low

Competitive Strategy

Q4: Based on your experience, kindly indicate the frequency of employing the following **business strategies** to improve the performance of your organisation to achieve the overall objectives using the scale below:

Never	Rarely	Sometimes	Very Often	Always
1	2	3	4	5

<i>Q4.1: Differentiation Strategy</i>	1	2	3	4	5
Achieving high quality in the constructed facility and beyond the requirements in the specifications					
Being highly responsive to clients' requests					
Achieving on schedule performance in construction operations and delivering constructed facilities					
Introducing innovative financing methods					
<i>Q4.2: Cost Leadership Strategy</i>	1	2	3	4	5
Emphasis on production capacity utilisation					
Emphasis on operating efficiency (e.g., productivity in production)					
Emphasis on finding ways to reduce costs					
Emphasis on price competition					
<i>Q4.3 Focus strategy</i>	1	2	3	4	5
Targeting a specific segment (e.g., emphasising a provincial region or a specific group of consumers)					
Offering unique products (e.g., unique function or design)					
Offering products suitable for a high price segment					

Q4.4 Evaluate your organisation's overall performance with respect to the effect of the "strategies adopted".

- ☐ Very High
- ☐ High
- ☐ Moderate
- ☐ Low
- ☐ Very Low

Resources and Capabilities

Q5 Based on your experience, please indicate your perception about the level of impact of employing any of the following **resources and capabilities** on improving the performance of the organisation to achieve the overall objectives using the scale below:

Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact
1	2	3	4	5

<i>Q5.1 Financial Resources</i>	1	2	3	4	5
Ability to use the company's own fund/finance to finance construction works					
Ability to get equity-selling part of the company					
Ability to secure debt or loan to fund expansion, improve profit ratio and improve cash-on-cash returns					
Ability to secure surety bond or insurance policy					
<i>Q5.2 Human Resources</i>	1	2	3	4	5
Strengthen the procedures for recruitment, training & promoting all levels of employees					
Enhance reward program for motivating and challenging employee					
Development of organisation capabilities through the participation of top managers & technical personnel in professional development					
Reduce absenteeism and maintain moderate staff turnover					
<i>Q5.3 Technological Resources</i>	1	2	3	4	5
Effectively assess technological opportunities and threat					
Company's R&D ensures allocation of resources efficiently					
Encourage creativity and innovation					
Technology is important for the company's market share as well as the quality of equipment					
Company is efficient in integrating the new technology into the business system and process					

Business Environment

Q6: The following questions relate to your organisation's **business environment characteristics**. Please indicate your assessment of the level of influence it has had on your organisation's performance by ticking the box using the scale provided below.

Very low	Low	Moderate	High	Very High
1	2	3	4	5

<i>Q6.1 Environmental Dynamism</i>	1	2	3	4	5
Our firm is faced with a rapidly changing marketing environment					
Customers constantly have new requirements about the products and services					
The demand for products/services and delivery time changes constantly					
<i>Q6.2 Environmental Competitiveness</i>	1	2	3	4	5
Our firm has relatively strong competitors					
Our firm is in a highly competitive market					
Price competition is a hallmark of our local market					
<i>Q6.3 Environmental Complexity</i>	1	2	3	4	5
Meeting the customers' need is complicated					
The segmentation within major end-user markets is complicated					
Managing the supply chain effectively is complicated					
<i>Q6.4 Environmental Munificence</i>	1	2	3	4	5
The demand for our product in our current market is strong and growing					
There are abundant resources (i.e., financial, supplies, and human) in our market to support the potential growth of the companies					
There is no shortage of necessary resources in our market					

Customers Relationship Management (CRM)

Q7: The following questions relate to your perception about the level of influence of the organisation's Customers Relationship management (CRM). Please indicate your assessment by choosing the option using the scale provided below.

Strongly Disagree	Disagree	Moderate	Agree	Strongly Agree
1	2	3	4	5

<i>Q7.1 Customer Acquisition, Regain & Retention Activities</i>	1	2	3	4	5
We differentiate our customer attracting efforts based on customer value					
We have a systematic process for trying to regain valued past customers					
We maintain regular interactive communications with our customers					
We have customer loyalty or retention programs					
<i>Q7.2 Cross-and-Upselling, customer Referral & Exit Management Activities</i>	1	2	3	4	5
We have a system that allows us to recommend different products\services to customers based on their previous demand					
We have a system that allows us to recommend higher-priced products to our customers					
We provide special discounts to valuable customers if they intensify their business with us					
We provide current customers with incentives for referring to new potential customers					
We try to actively manage the customer referral process					
We have policies and procedures for discontinuing relationships with low-value or problem customers					

Organisational Performance

Q8: The following questions relate to your perception of how successful (Improved) you consider your **organisation's performance**. Kindly respond to each statement by clicking one of the boxes associated with five ratings, where 1 = Very Insignificant Improvement, and 5 = Very Significant Improvement

<i>Q8.1 Financial Perspective</i>	1	2	3	4	5
Accelerate revenue growth					
Increase return on investment					
Increase profitability					
Control total cost					
<i>Q8.2 Customer Perspective</i>	1	2	3	4	5
Increase market share					
Increase customer acquisition/ Attract new customers					
Increase customer satisfaction/Meet customers' needs					
Increase customer retention/loyalty/Repeat business					
<i>Q8.3 Internal-Business-Process Perspective</i>	1	2	3	4	5
Reduce order cycle time					
Meet contract schedule/Meet time standards					
Lower cost of existing process					
Improve quality standards					
Speed up new product in comparison to competitors/Technology					
<i>Q8.4 Learning and Growth Perspective</i>	1	2	3	4	5
High employee satisfaction					
High employee retention					
High employee productivity					

End of Questionnaire

Thank you for your participation

Interview guide

Interviewee's name:

Start and finish time of the interview:

Section A: Demographics

1. How many years have you worked in the organisation?
2. How many employees do you have in your organisation?
3. What is your position in the organisation?

Section B: PLS model validation

Please have a look at the PLS model I developed as a result of my research.

1. In your opinion, does the model cover the main determinants that affect the construction organisational performance in the New Zealand construction industry?
2. To what extents do you consider these results the case in your company?
3. What could be added to the current model to make it more comprehensive?

Thank you for your time and contribution toward this research.