A rank order of determinants of construction organisations' performance in New Zealand

Hamzah E. Alqudah, Auckland University of Technology, New Zealand

Mani Poshdar, Auckland University of Technology, New Zealand

John Tookey, Auckland University of Technology, New Zealand

James Olabode Bamidele Rotimi, Massey University, New Zealand

hamzah.alqudah@aut.ac.nz

ABSTRACT

There are certain factors within and outside organisations that can influence organisational performance. The presence or absence of those factors impacts organisations' ability to gain a competitive advantage over their rivals. As a risk-prone business sector, construction organisations need 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, few of these are known in New Zealand, and their weightings could be useful in forming business strategies. Therefore, this paper measures the significance of identified determinants of construction organisational performance. A total of 100 professionals participated in a questionnaire survey administered using a snowball sampling technique. The Relative Importance Index approach was used to rank the determinants according to their importance to organisational performance. Five main determinants were significant and ranked highly, with more than 80% relative importance index scores. These determinants are resources and capabilities, competitive strategies, organisational characteristics, environmental factors, and customers 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.

KEYWORDS: Construction organisations, Determinants, New Zealand, Performance differentials, Organisational performance.

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 G.D.P. (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 8-10 per cent of national employment in 2015 (PwC, 2016). With a 6.1 per cent contribution to New Zealand's GDP, the construction industry took second place (after the manufacturing industry) as the most valuable good-producing industry in March 2017 (MBIE, 2017). Construction industry integrates directly and indirectly with other sectors creating a more significant effect on the economy (Stats NZ, 2019).

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 SMEs' survival rate in all construction industry sectors (businesses with 1-19 employees) started in 2012 does not exceed 44% after five years. Surprisingly enough, only 80% of the SMEs have survived after the first year (Stats NZ, New Zealand business demography statistics: At February 2017, 2017). Table 1 shows the survival rate for residential and non-residential SMEs that started between 2012 and 2015.

Table 1: Survival rate (%) for SMEs that started in 2012-15 (Statistics New Zealand, 2018)

Residential building construction					
Businesses birth	After 1 Year	After 2 Years	After 3 Years	After 4 Years	After 5 Years
2012	82	67	57	50	44
2013	86	72	60	52	..
2014	85	68	56	..	..
2015	85	68	..	..	..
Non-Residential building construction					
2012	77	62	45	39	32
2013	84	70	60	52	..
2014	83	61	53	..	..
2015	85	69	..	..	..

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 befits 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 today's 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, 2001).

Table 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	Effect of Strength of Relationships with Other Parties (ROP)	1
18	Construction Equipment Selection Factors (CESF)	1

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 2) were predominant determinants of organisational performance in construction (Alqudah, Poshdar, Rotimi & Oyewobi, 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.

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 (2011), Teece (2007) and Sun, Ding and Gu (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 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).

As an external determinant, relationship with other parties found to be the primary influencer of organisational performance. The performance of construction organisations is influenced by the strength of their relationships with the parties involved in typical construction projects such as public or private clients, regulatory agencies, subcontractors, labour unions, material dealers, surety companies, and financial institutions. This strength found to have a direct positive relationship with organisational performance (Hausman, 2001; Dainty *et al.,* 2003). Business environmental forces 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. Competitive strategies, organisational characteristics, management strategies, total quality management, knowledge management, and human resources management are min managerial determinants of organisational performance. Competitive advantage has a positive

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/ijcscm100220-194-211

197

relationship with competitive strategies (Porter, 1980; Miller & Cardinal, 1994; Tan *et al.,* 2012, Oyewobi *et al.,* 2016: 2017), strategic management (Dikmen *et al.*, 2005; Isik *et al.,* 2009), 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.,* 2013). 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.*, 2005).
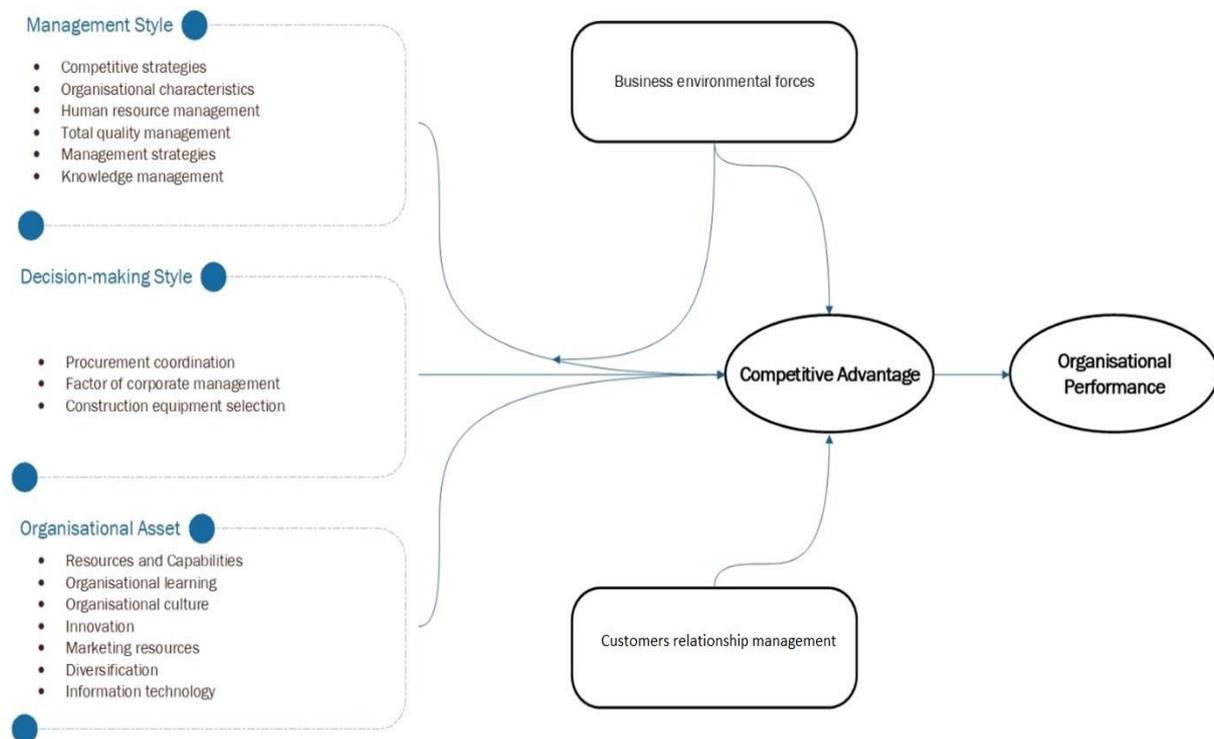

Figure 1: Conceptual Framework of Performance Determinants (Alqudah *et al.,* 2018)

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).

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, 2011; Tan *et al.,* 2012; Oyewobi *et al.,* 2016; Tripathi & Jha, 2017).

Competitive advantage is positively and directly associated with information technology (EI-Mashaleh *et al.,* 2006; Sun *et al.*, 2008), organisational learning (Wong *et al*., 2014; Zhai *et al.,* 2013), 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.

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 a 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 development. The second step is explained in detail in the following section.

Step 2: Ranking the Main Determinants

This study obtained 100 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= 1.96² x 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:

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

Where, pop is population.

Therefore, New ss = 96.04 / 1+ [(96.04-1) / 65,320]

    New ss= 95.90, 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.

    Survey sample size = New ss / 0.3 = 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 study 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, 100 responses were received, which equates to a response rate close to 30%. 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, n1 = number of respondents for No effect, n2 = number of respondents for low effect, n3 = number of respondents for moderate effect, n4= number of respondents for high effect, n5= 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 3 illustrates the details of the responses regarding the perceived importance of each determinant.

Table 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

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 presents the results.

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, it can be observed that a natural cut-off point of 0.804, produces five fundamental determinants.

Table 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

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.

Environmental Factors (RII= 0.810)

This study classifies the environmental factors 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 environmental factors 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.

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.

Note: An earlier version of this paper was presented and published in the proceedings of the 6th New Zealand Built Environment Research Symposium (NZBERS), Auckland, New Zealand. February 2020.

REFERENCES

Akadiri, O.P. (2011). Development of a multi-criteria approach for the selection of sustainable materials for building projects.

Al Qudah, H., Poshdar, M., Rotimi J.O.B. & Oyewobi, L. (2018). Determinants of construction organisations' performance: A systematic literature review. 42nd AUBEA Conference, Singapore, 26-28 September. Pp. 244-253.

Amzat, I.H., & Idris, 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, 26(*7), 616-645. https://doi.org/10.1108/09513541211263700

Anikeeff, M.A., & Sriram, V. (2008). Construction management strategy and developer performance. *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. Unpublished PhD thesis submitted to School of Engineering and the Built Environment, University of Wolverhampton, UK.

ANZ. (2017). New Zealand construction Residential & Non-Residential Market Update. New Zealand: ANZ.

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. *Academy of Management Journal, 43*, 837-853. https://doi.org/10.2307/1556413

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/ijcscm100220-194-211

205

Bakar, A.H.A., Yusof, M.N., Tufail, M.A., & Virgiyanti, W. (2016). Effect of knowledge management on growth performance in construction industry. *Management Decision, 54*(3), https://doi.org/10.1108/MD-01-2015-0006

Barney, J.B. (1991). Firm resources and sustained competitive advantage. *Journal of Management, 17*, 99-120. https://doi.org/10.1177/014920639101700108

Barney, J.B. (2011). Gaining and Sustaining Competitive Advantage (4th ed.) Upper Saddle River, NJ: Prentice Hall.

Betts, M. & Ofori, G. (1992). Strategic planning for competitive advantage. *Construction Management and Economics, 10*(6), 511-532. https://doi.org/10.1080/01446199200000049

Chew, D.A.S., Yan, S. & Cheah, C.Y.J. (2008). Core capability and competitive strategy for construction SMEs in China. *Chinese Management Studies, 2*(3), 203-214. https://doi.org/10.1108/17506140810895898

Choi, J., & Russell, J.S. (2005). Long-term entropy and profitability change of United States public construction firms. *Journal of Management in Engineering, 21*(1), 17-26. https://doi.org/10.1061/(ASCE)0742-597X(2005)21:1(17)

Covin, K. & Slevin, D. (1991). A conceptual model of entrepreneurship as firm behavior. *Entrepreneurship Theory and Practice, 16*(1), 121-154. https://doi.org/10.1177/104225879101600102

Creswell, J.W. (2009). Research Design: Qualitative, Quantitative and Mixed Methods Approaches. Sage, Thousand Oakes.

Crossan, M., & Apaydin, M. (2010). A multi-dimensional framework of organisational innovation: A systematic review of the literature. *Journal of Management Studies, 47*(6), 1154-1191. https://doi.org/10.1111/j.1467-6486.2009.00880.x

Dainty, A.R.J., Cheng, M. & Moore, D. (2003). Redefining performance measures for construction project managers: An empirical evaluation. *Construction Management and Economics, 21*(2), 209-221. https://doi.org/10.1080/0144619032000049737

Dess, G. and Beard, D. (1984). Dimensions of organisational task environments. *Administrative Science Quarterly, 29*(1), 2-73. https://doi.org/10.2307/2393080

Dikmen, I., Birgonul, M.T., & Kiziltas, S. (2005). Prediction of organisational effectiveness in construction companies. *Journal of Construction Engineering and Management, 131*(2), 252-261. https://doi.org/10.1061/(ASCE)0733-9364(2005)131:2(252)

Duh, R., Hsu, A., & Huang, P. (2012). Determinants and performance effect of TQM practices: An integrated model approach. *Total Quality Management & Business Excellence, 23*(5/6), 689-701. https://doi.org/10.1080/14783363.2012.669555

Elfar, A., Elsaid, A.M., & Elsaid, E. (2017). How knowledge management implementation affects the performance of Egyptian construction companies. *Journal of Applied Business Research, 33*(3), 409. 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 utilisation in the construction industry. *Journal of Construction Engineering and Management, 132*(5), 499-507. https://doi.org/10.1061/(ASCE)0733-9364(2006)132:5(499)

Flanagan, R., Lu, W., Shen, L., & Jewell, C. (2007). Competitiveness in construction: A critical review of research. *Construction Management and Economics, 25*(9), 989-1000. https://doi.org/10.1080/01446190701258039

Gündüz, M., Nielsen, Y., & Özdemir, M. (2013). Quantification of delay factors using the relative importance index method for construction projects in Turkey. *Journal of Management in Engineering, 29*(2), 133-139. https://doi.org/10.1061/(ASCE)ME.1943-5479.0000129

Hausman, A. (2001). Variations in relationship strength and its impact on performance and satisfaction in business relationships. *Journal of Business & Industrial Marketing, 16*(7), 600-616. https://doi.org/10.1108/EUM0000000006194

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

Ibrahim, Y.M. and Kaka, A. P. (2007). The impact of diversification on the performance of UK construction firms. *Journal of Financial Management of Property and Construction, 12*(2), 73-86. https://doi.org/10.1108/13664380780001095

Idrus, A.B., & Newman, J.B. (2002). Construction related factors influencing the choice of concrete floor systems. *Construction Management and Economics, 20*, 13-19. https://doi.org/10.1080/01446190110101218

Isik, Z., Arditi, D., Dikmen, I., & Birgonul, M.T. (2009). Impact of resources and strategies on construction company performance. *Journal of Management in Engineering, 26*(1), 9-18. https://doi.org/10.1061/(ASCE)0742-597X(2010)26:1(9)

Johnson, J.W. & LeBreton, J.M. (2004). History and use of relative importance indices in organisational research. *Organisational Research Methods, 7*(3), 238-257. https://doi.org/10.1177/1094428104266510

Kale, S., & Arditi, D. (2003). Differentiation, conformity and construction firm performance. *Journal of Management in Engineering, 19*(2), 52-60. https://doi.org/10.1061/(ASCE)0742-597X(2003)19:2(52)

Kim, H. & Reinschmidt, K.F. (2012). Market structure and organisational performance of construction organisations. *Journal of Management in Engineering, 28*(2), 212-220. https://doi.org/10.1061/(ASCE)ME.1943-5479.0000082

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/ijcscm100220-194-211

207

Kitchenham, B., & Charters, S. (2007). Guidelines for performing systematic literature reviews in software engineering.

Lambert, D.M., Cooper, M.C., & Pagh, J.D. (1998). Supply chain management: Implementation issues and research opportunities. *International Journal of Logistics Management, 9*(2), 141-158. https://doi.org/10.1108/09574099810805807

Langford, D., & Male, S. (2001). Strategic Management in Construction (2nd ed), Oxford, Blackwell Science. https://doi.org/10.1002/9780470690291

Lansley, P. (1987). Corporate strategy and survival in the UK construction industry. *Construction Management and Economics, 5*, 141-155. https://doi.org/10.1080/01446198700000013

Lansley, P. (1994). Analysing construction organisation. *Construction Management and Economics, 12*(4), 337-348. https://doi.org/10.1080/01446199400000043

Lee, Y., Moon, H., & Lee, H. (2011). Investigating the structural hierarchy of quality capabilities in construction organisations. *Journal of Asian Architecture and Building Engineering, 10*(1), 141-148. https://doi.org/10.3130/jaabe.10.141

Lenz, R.T. (1981). Determinants of organisational performance: An interdisciplinary review. *Strategic Management Journal, 2*(2), 131-154. https://doi.org/10.1002/smj.4250020204

Li, S. & Ling, F.Y.Y. (2012). Critical strategies for Chinese architectural, engineering and construction firms to achieve profitability. *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. *Systemic Practice and Action Research, 23*(6), 509-528. https://doi.org/10.1007/s11213-010-9170-8

Lynch, R. (2012). Strategic Management (6th ed.). Pearson Prentice Hall.

Madu, C.N., Kuei, C.H., & Jacob, R.A. (1996). An empirical assessment of the influence of quality dimensions on organisational performance. *International Journal of Production Research, 34*(7), 1943-1962. https://doi.org/10.1080/00207549608905006

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. *Journal of Engineering and Technology Management, 43*, 19-33. https://doi.org/10.1016/j.jengtecman.2016.11.002

MBIE. (2017). Future demand for construction workers. Wellington, Ministry of Business, Innovation and Employment, New Zealand.

Miller, C.C. & Cardinal, L.B. (1994). Strategic planning and firm performance: A synthesis of more than two decades. *Academy of Management Journal, 37*(6), 1649-1665. https://doi.org/10.2307/256804

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/ijcscm100220-194-211

208

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. DOI: 10.5923/j.ijcem.20140301.02

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

Newbert, S.L. (2008). Value, rareness, competitive advantage, and performance: A conceptual-level empirical investigation of the resource-based view of the firm. *Strategic Management Journal, 29*(7), 745-768. https://doi.org/10.1002/smj.686

Noktehdan, M., Shahbazpour, M., & Wilkinson, S. (2015). Driving innovative thinking in the New Zealand construction industry. *Buildings, 5*(2), 297-309. https://doi.org/10.3390/buildings5020297

Ofori, G. & Chan, S.L. (2000). Growth paths of construction enterprises in Singapore, 1980-98. *Engineering, Construction and Architectural Management, 7*(3), 307-321. https://doi.org/10.1046/j.1365-232x.2000.00161.x

Othman, A.A., Abd Rahman, S., Sundram, V.P.K. and Bhatti, M.A. (2015). Modelling marketing resources, procurement process coordination and firm performance in the Malaysian building construction industry. *Engineering, Construction and Architectural Management, 22*(6), 644-668. https://doi.org/10.1108/ECAM-02-2014-0030

Oyewobi, L.O., Windapo, A.O., Rotimi, J.O.B., & Jimoh, R.A. (2016). Relationship between competitive strategy and construction organisation performance: The moderating role of organisational characteristics. *Management Decision, 54*(9), 2340-2366. https://doi.org/10.1108/MD-01-2016-0040

Panuwatwanich, K., & Nguyen, T. T. (2017). Influence of total quality management on performance of Vietnamese construction firms. *Procedia Engineering, 182*, 548-555. https://doi.org/10.1016/j.proeng.2017.03.151

Pertusa-Ortega, E.M., Molina-Azorin, J.F., & Claver-Cortes, E. (2008). A comparative analysis of the influence that different fit perspectives have on firm performance. *Management Research, 6*(2), 139-150. https://doi.org/10.2753/JMR1536-5433060205

Porter, M. E. (1985). Technology and competitive advantage. *Journal of business strategy*. https://doi.org/10.1108/eb039075

Porter, M.E. (1980). Competitive Advantage: Creating and Sustaining Superior Performance. New York: Free Press.

PwC. (2016). Valuing the role of construction in the New Zealand economy. Auckland. PriceWaterhouseCooper.

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/ijcscm100220-194-211

209

Reid, M. (2019, October 25). Construction industry at the top of the ladder for business counts growth. Retrieved from Stats NZ: https://www.stats.govt.nz/news/construction-industry-at-the-top-of-the-ladder-for-business-counts-growth

Rudd, J., Greenley, G., Beastson, A. & Lings, I. (2008). Strategic planning and performance: Extending the debate. *Journal of Business Research, 61*(2), 99-108. https://doi.org/10.1016/j.jbusres.2007.06.014

Samee, K. & Pongpeng, J. (2012). Construction equipment selection: A common procedure. Proceedings of the 2nd International Symposium on Technology for Sustainability (ISTS 2012), 21-24 November 2012, The Swissotel Le Concorde, Bangkok, Thailand, pp 281-284.

Schuler, R.S., & Jackson, S.E. (1987). Linking competitive strategies with human resource management practices. *Academy of Management Perspectives, 1*(3), 207-219. https://doi.org/10.5465/ame.1987.4275740

Seuring, S., & Müller, M. (2008). From a literature review to a conceptual framework for sustainable supply chain management. *Journal of Cleaner Production, 16*(15), 1699-1710. https://doi.org/10.1016/j.jclepro.2008.04.020

Stats NZ. (2019). Construction industry at the top of the ladder for business counts growth. Retrieved from Stats NZ: https://www.stats.govt.nz/news/construction-industry-at-the-top-of-the-ladder-for-business-counts-growth

Sun, J., Ding, L., & Gu, X. (2008). Empirical Study on Impact of Information Technology on Construction Firm Performance, In Information Management, Innovation Management and Industrial Engineering, 2008. ICIII'08. International Conference on (Vol. 1, pp 54-57). IEEE. https://doi.org/10.1109/ICIII.2008.188

Tam, V.W., & Le, K.N. (2006). Environmental assessment by power spectrum. Sustainable Development through Culture and Innovation.

Tan, Y., Shen, L. & Langston, C. (2012). Competition environment, strategy, and performance in the Hong Kong construction industry. *Journal of Construction Engineering and Management, 138*(3), 352-360. https://doi.org/10.1061/(ASCE)CO.1943-7862.0000407

Teece, D. J. (2007). Explicating dynamic capabilities: The nature and micro foundation of (sustainable) enterprise performance. *Strategic Management Journal, 28*(13), 1319-1350. https://doi.org/10.1002/smj.640

Tripathi, K.K., & Jha, K.N. (2017). Determining success factors for a construction organisation: A structural equation modelling approach. *Journal of Management in Engineering, 34*(1), 04017050. https://doi.org/10.1061/(ASCE)ME.1943-5479.0000569

Vanegas, P., & Alarcon, L. (1997). Selecting long-term strategies for construction firms. *Journal of Construction Engineering and Management, 123*(4), 388-398. https://doi.org/10.1061/(ASCE)0733-9364(1997)123:4(388)

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/ijcscm100220-194-211

210

Veronika, A., Riantini, L.S., & Firmansyah, B.A. (2008). Identification of the factors in corporate management that influence construction company's performance in Indonesia. *Innovation in Structural Engineering and Construction*, 1363-1367.

Qualtrics (2020, April 12). What is Qualtrics? Retrieved from Qualtrics: https://www.qualtrics.com

Wong, P.S., Demertjis, M., Hardie, M., & Lo, C.Y. (2014). The effect of unlearning on organisational learning behaviour and performance in construction contracting organisations. *International Journal of Project Organisation and Management, 6*(3), 197-214. https://doi.org/10.1504/IJPOM.2014.065256

Zahra, S.A., Ireland, D., & Hitt, M. (2000). International expansion by new venture firms: International diversity, mode of market entry, technology learning and performance. *Academy of Management Journal, 10*(1), 925-950. https://doi.org/10.5465/1556420

Zhai, X., Liu, A.M., & Fellows, R. (2013). Role of human resource practices in enhancing organisational learning in Chinese construction organisations, *Journal of Management in Engineering, 30*(2), 194-204. https://doi.org/10.1061/(ASCE)ME.1943-5479.0000207