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Determining strategic clusters and performance of construction organizations in South Africa

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ABSTRACT

This study examines the linkage of strategic clusters and performance of South African organizations, using Porter's generic strategies to determine whether differences exist between clustered organizations in terms of performance, characteristics, resources and capability and how the companies achieve strategic fit within different environments. A questionnaire survey was used to collect data from construction companies registered in Grades 7–9 on the cidb contractor register. The study results show that four clusters of construction organizations exist in the South African construction industry; that the four strategic groups exhibited the characteristics of Miles and Snow's Taxonomy of Strategies; and that human resource capabilities were significantly different across the groups. However, the results show no statistically significant differences among the clusters in terms of performance. It emerged that all the respondents' organizations placed a high premium on employee satisfaction as a measure of achieving success. This study thus proved empirically that different clusters of organizations exist within the South African construction industry, and that they exhibit the characteristics of defenders, prospectors, analysers and reactors.

KEYWORDS

Competitive advantage; cluster analysis; organizational performance and Strategic clusters

Introduction

In South Africa, the construction industry is regarded as a national asset that has to be nurtured, developed and transformed to meet both the local and global challenges posed by the competitive environment (cidb 2004). Dlungwana et al. (2002) had described the South African construction industry as an important factor in its economic growth. There has been appreciable success and growth experienced by the sector in recent times such as increase in its total income from R100.4 million in 2004 to R268,100 million in 2011 (StatsSA 2011). Continuous spending on infrastructure by government also enhances the status of the industry and its contributions to national development. However, the prevailing industrial, economic and socio-cultural environments in South Africa present a number of threats as well as opportunities to the sector. The opportunities include the patronage by the public sector and the increase in government spending on the provision of infrastructure. For instance, government planned to procure 18 strategic infrastructure to the amount of R4 trillion over 15 years, from 2008 (Black 2008; Riaz 2012). Construction organizations are therefore able to compete for and execute new projects that are available, make profit and thus grow. Other opportunities include an enabling business environment and few stringent entry barriers to construction organizations (cidb 2012).

However, despite the attractive outlook of the industry, it could be confronted with a number of threats that would have significant effects on its performance (Tobin 2006; Bowen et al. 2007). In South Africa, there are over 30 laws that have direct impact on construction operations (cidb 2004). One example is the Preferential Procurement Policy Framework Act, 2000 – which provides for the creation of categories of preference in the award of contracts to enhance the development of organizations owned and managed by Historically Disadvantaged Individuals (HDI) in South Africa. Another example is the Broad-Based Black Economic Empowerment Act, 2004 – which creates a legislative framework for promoting economic empowerment of black South Africans and provides code of practice related to procurement criteria and guidelines. These laws and policies impact on the industry capabilities, performance and competitiveness; these appear to have negative effects on economy as well as foreign direct investment (FDI), which represents the main source of development capital for emerging

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markets in the current world economy (Ding and Chee-Wah 2006; Veloso 2008).

Other threats include those from poor competitive environment, corruption and economic instability (Tobin 2006; Bowen et al. 2007). The Competition Act No 89 of 1998 highlights various anti-competitive behaviours and obstructive business practices such as price fixing, predatory pricing and collusive tendering as well as manipulation by dominant organizations that have a market share of 35% or above (Gasa 2012). Yet the South African business environment is viewed as having a well-controlled and improved competition system orchestrated by the Competition Commission (Gasa 2012). However, government legislation gives preferences to black owned construction organizations through black economic empowerment, many of which have no technical expertise to execute construction projects (Martin and Root 2012). The South African construction industry in 2003 contributes a total investment of 10% of the South African GDP (Baloyi 2012). As a result of these threats and some other factors identified such as lack of management skills, resources and capabilities couple with global economic recession, the industry's contribution to the GDP declined to 8% by 2012. This drop in the industry was due to lack of growth in the total construction works, such as civil works, roads, bridges, gas pipelines and the like, which will potentially continue to experience the downturn up to 2015 (Snyman 2010).

To confront the threats, opportunities and organization-wide challenges, it becomes imperative for organizations to develop clear strategic perspectives to achieve superior performance (Dikmen et al. 2009). Organizations need to assess both their external opportunities and threats as well as strengths and weaknesses (SWOT) using their main business success criteria and core competencies to develop strategies that permit their favourable response to environmental challenges. The essence of developing good strategic posture by construction organizations have been underscored by previous researchers (e.g. Betts and Ofori 1992; Dikmen and Birgonul 2003; Dikmen et al. 2009). Dikmen et al. (2009) reiterated that it is obvious that some construction organizations operating in the same industry may have analogous resources or competencies and may have comparable strategic perspectives, but it is unclear if their performances are alike. In spite of researches on clustering organizations, to enable better understanding of their strategic orientation within industries and to appraise their scope and mode of competition for performance enhancement, little empirical construction industry research exists in this subject area in South Africa (Oyewobi 2014).

The main objective of this research is to identify strategic group structure within the South African construction industry, and to determine whether differences exist between organizations in terms of performance, characteristics, and resources/capability and also identify if strategic behaviour is associated with cluster affiliation. This is premised on the underlying assumption of strategic group theory that all organizations in an industry experience the same competitive environment and that differences in organizational capabilities/resources justify the differences in strategic behaviour (Zinn et al. 1994).

The regulatory policies in the South African construction industry differentiate the competitive environment and showed that certain companies are promoted above others. Therefore, the preferential policies regulating the construction industry business environments may be the driver for the identified strategic group structure rather than divergence in organizational strategy, resources or capability (Heath 1988). However, these are symptoms that construction organizations operating within the study area function under heterogeneous regulatory circumstances, and thus adapt their strategic behaviour to meet these situations.

Budayan (2008) stated that construction organizations are required to have defined strategies in order to remain competitively relevant and that their strategies should align with organizations goals and resources. Lenz (1981) identifies competitive strategy, business environment, and characteristics of the organization as the major performance determinants. In explaining the causes of performance difference between organizations that adopt different strategies, the concept of strategic cluster analysis was introduced.

Nonetheless, a few studies within the construction management field have used strategic group analysis in identifying homogenous construction organizations using different features (e.g. Kale and Arditi 2002; Claver et al. 2003). For instance, Tan et al. (2012) used strategic group analysis to classify construction firms in Hong Kong by considering the competitive environment, strategy and performance. Budayan (2008) clustered Turkish construction firm based on their strategy and competencies/resources. Porter (1985) asserted that the essence of strategy is to obtain strategic fit within the environment, thus how construction organizations develop strategies to align with the competition environment using their competencies/resources is dependent on organizational characteristics (Lansley 1987). Many of these construction studies have not been able to identify how strategies, competitive environment and resources combined with organizational characteristics could lead to performance differences on one hand and examination of strategic group analysis on the other hand.

This paper is arranged in the following order: the next section presents literature on strategic management and clustering with a focus on the construction industry. This is followed by an overview of the research methodology used in the study. Thereafter, the data analysis, results and discussion of findings are presented. The conclusions and recommendations for future studies form the final part of this paper.

Strategic cluster analysis in construction

A strategic cluster was identified by Porter (1980) as a group of organizations operating in an industry with analogous strategy along established strategic dimensions. Dikmen et al. (2009) identified strategic dimensions as those involving strategic decision-making processes that best individualize organizations based on the adopted strategy, scope and mode of competition. In order to achieve sustainable competitive advantage, organizations need to maintain a strategic position and pursue strategy that will enhance their achievement of organizational goals. This assertion is consistent with Porter (1980) who contended that in analysing the structure of an industry, strategic cluster analysis remains the first measure to give insight into the strategies of all the important rivals.

Kale and Arditi (2002) examined the concept of competitive positioning and its influence on organizational performance within the United States construction industry and they classified organizations based on their scope and mode of competing. Kale and Arditi study found that the grouping of construction organizations on the basis of mode and scope of competition helped in identifying difficulties confronting organizations and that their performance was significantly linked to their mode of competition. Claver et al. (2003) explored strategic groups and performance of house-building organizations in the Spanish construction sector. Their research explored the four clusters identified using Porter's (1980) generic strategies with 88 organizations, their empirical results showed no significant differences in the performance of the clusters.

Dikmen et al. (2009) investigated whether groups of construction organizations in Turkish construction industry had similar strategic positions, using both theoretical framework and statistical analysis. Their study revealed that significant differences existed in the performance of the three clusters identified and they argued that this finding can help to formulate strategies that improve performance through understanding of the strategic orientation of organizations within competitive environments.

More recently, Tan et al. (2012) explored the competitive environment, strategy and performance of construction organizations in the Hong Kong construction industry. The study adopted Porter's (1980) generic typology of business strategies and classified organizations based on their backgrounds and strategic orientations. Tan et al. (2012) aligned the clusters with Mile and Snow's (1978) taxonomies: defender, analyser, prospector and reactors and argued that these are realities within the context of their study. The main objective of the current study is not to validate these studies but to examine and understand whether different strategic clusters exist within the South African construction industry and to establish whether the models linked with strategic orientation of organizations can offer explanation for performance heterogeneity.

Clustering of construction organizations

Both strategy and construction management literature contain many examples of investigations into the structure of competitors within an industry. Categorizing and comparing different types of organizations can be useful in explaining differences in the performance among organizations operating within the same industry (Porter 1980; Kale and Arditi 2002; Dikmen et al. 2009; Tan et al. 2012). However, some researchers have questioned the existence of a theoretical foundation for identifying such strategic groupings (e.g. Hatten and Hatten 1987; Barney and Hoskisson 1990). This criticism stems from the inability of researchers to distinguish between true and spurious effects, and the *a-priori* adoption of cluster analysis to determine groupings even when no clear subsets are evident in the sample of organizations (Dranove et al. 1998; Budayan 2008). According to Hair et al. (2010) and Kim and Lim (1988), some challenges which might impair the outcome of cluster analysis techniques include variation in the units of measurement, problems in determining the number of clusters to retain intercorrelations among the variables, and inappropriate tests of statistical significance.

Despite the critiques, the concept of clustering organizations into different strategic categories or 'families' can be applied usefully. Clustering provides a way to describe how organizations differ in terms of the strategies they use. It also allows one to test the hypothesis that organizations with better strategies outperform those with weak or confused strategies (Schendel and Hofer 1979). To this end, this research used cluster analysis (based on organizations' backgrounds and strategic orientations) to categorize organizations with similar strategies into groups. This classification might help organizations to have a better understanding of their strategic attributes, and to put in place mechanisms for improving performance through competitive strategies.

Although different tools such as taxonomies, factor analysis and clustering algorithms have been applied in strategic grouping of organizations (Dess and Davis 1984; Harrigan 1985; Kim and Lim 1988), cluster analysis remains the most popular multivariate technique for strategic grouping.

Methodology

Construction management is an eclectic field of study that draws on a wide range of disciplines such as social sciences, natural sciences, management as well as engineering, to provide context depending on its requirements (Dainty 2008; Fellows and Liu 2008). Some of the studies on strategic management in construction utilized single approach-quantitative methods (e.g. Kale and Arditi 2003; Pamulu 2010; Tan et al. 2012). Amaratunga et al. (2002) and Ankrah (2007) explained that the essence of undertaking research at this stage is to advance a new perspective to an existing body of knowledge for which a quantitative approach is appropriate. The main objective of this study is to conduct strategic group analysis of the South African construction industry. It identifies possible strategic clusters with different strategic stance among large civil and building construction organizations in the South African construction industry and examines whether there is performance differentials within the different strategic groups.

The target population for the study were all the registered construction organizations in Grades 7–9 on the *Construction Industry Development Board* (cidb) register of contractors in three major provinces (Gauteng, Kwazulu Natal and the Western Cape) in South Africa. These grades (i.e. the 'top' three levels of the register, which included the largest organizations) were selected on the basis that they exhibited obvious competitive strategies, and had in place requisite technology and financial strength for competing within the industry (cidb 2012). A well-structured questionnaire was developed after extensive review of relevant literature and same was pilot surveyed among 30 construction organizations to ensure the clarity and reliability of the questionnaire developed for the study. The pilot study participants were randomly selected from the three major provinces in South Africa, before the main data collection process.

The study considered these three provinces due to their geographical dispersion, and also because almost 70% of public construction projects across South Africa were executed in those regions in the last six years (StatSA 2012). Of all the registered construction organizations, 577 organizations (population) were identified to be active in the target study area as obtained from the database of cidb. Pertusa-Ortega et al. (2010) argued that it is practically impossible in research to obtain data from the entire population and coupled with the high number of bounced mails when these contractors were invited for participation in the survey, the study employed a non-response bias approach. This was carried out by using minimum sample size calculations (Ankrah 2007) to determine sample that will be adequately representative of the entire population with reference to provincial regions, and thus 277 (sample) was obtained as the number of questionnaires to be distributed.

The questionnaire was sent out to 277 chief executives officers (CEOs), directors and senior managers within the target study area; these were individuals who had the most complete knowledge of their organizations' strategy. This study posited that if the respondents were not at the strategic management level in their organizations or do not have requisite knowledge about the strategic issues being investigated; this could have a significant impact on the result of the study. Web-based approach to questionnaire administration was used due to geographical dispersion and the participants were requested via emails to complete an online survey. There were 72 valid and usable responses out of 277 questionnaires sent out (corresponding to a response rate of 26%). In addition to the survey, objective performance data on financial performance of the organizations over a 5-year period were obtained. Although, Kale and Arditi (2003) asserted that a 3-year period was long enough to evaluate the effects of change and its influence on organization's performance.

This paper considered the three generic strategies identified by Porter (1980, 1985), as operationalized by measurement scales adapted from Kale and Arditi (2003) and Nandakumar et al. (2010). The study measured the performance of organizations using both objective and subjective measures adapted from Dess and Davis (1984) and Nandakumar et al. (2010). Organizational characteristics were operationalized (see Table 4) using decision-making style, management style and organizational structures (Lansley 1987; Amzat and Idris 2012), while business environment dimensions were measured using previously validated scales (Kabadayi et al. 2007; Nandakumar et al. 2010). The last part provided scales for measuring resources and capabilities of organizations. This included financial, technological and human resources. Each variable in the constructs were measured with multi-item 5-point Likert scales.

Data analysis and results

Cluster analysis

This is one of the most widely used multivariate methods for identifying groupings of organizations or objects that

share similar characteristics (Kale and Arditi 2002; Cheng and Leu 2009; David and Averbuch 2012; Tan et al. 2012). Ankrah (2007) argued that whenever a researcher has a huge amount of information to classify into more manageable categories, cluster analysis is a good technique to use. Kale and Arditi (2002) posited that cluster analysis is generally believed to be an aspect of exploratory data analysis rather than inferential statistics. The cluster analysis technique was employed to categorize construction organizations on the basis of their characteristics, strategic orientation and behaviour in deploying their competitive strategies to achieve superior performance. The aim of the analysis was to maximize the homogeneity of construction organizations within the cluster, while concurrently maximizing the heterogeneity between clusters (Hair et al. 2010).

This study adopted the *k*-means cluster analysis procedure using an algorithm that allocates each value to the nearest cluster centroid, while reducing the squared error function (Kale and Arditi 2002; Tan et al. 2012). The algorithm can either be hierarchical or non-hierarchical (Garson 2007), but for the purpose of this research the non-hierarchical clustering method was used. The technique uses squared Euclidean distance measures for calculating the distances between observations. Competitive strategies variables as well as organizational characteristics and resources that were used as input for the *k*-means cluster analysis were standardized (with mean = 0 and standard deviation = 1) to avoid the influence of possible bias due to variation of scales in determining the Euclidean measures among the cases (Hambrick 1983; Harrigan 1985; Kim and Lim 1988). According to Ankrah (2007), Kale and Arditi (2002) and Tan et al. (2012), the main challenge facing researchers using this technique is to choose the most appropriate number of clusters. The ideal number of clusters is ascertained by checking whether there is a considerable increase or decrease in the squared error of clusters as the algorithm used in the *k*-means moves from one cluster to the next (Kale and Arditi 2002; Tan et al. 2012). In these studies, the significance of adopting cluster analysis has been made apparent in providing an understanding of competitive positioning and strategic behaviours of homogeneous groups of organizations.

Before undertaking cluster analysis, factor analysis was performed to identify the strategic competitive dimensions strongly associated with each of Porter's generic strategies, as used by Dess and Davis (1984) and Kim and Lim (1988). Variables with factor loading above the 0.5 threshold were retained; those with lower loadings were excluded from further analysis in the interests of parsimony. The study also examined the data for multicollinearity between the variables using Pearson correlations, as multicollinearity may result in errors among the underlying constructs (Dikmen et al. 2009). No evidence of multicollinearity effects was found within the data set. The data used for the analysis were standardized as *z*-scores (with mean = 0, standard deviation = 1) to eliminate inherent partiality in calculating Euclidean distance between the variables (Kale and Arditi 2002; Tan et al. 2012).

The selection of an appropriate number of clusters is an important consideration in cluster analysis techniques. Kim and Lim (1988) contended that the number of clusters may be determined by identifying a distinct mean-squared error of clusters as they pass from one solution to the other. However, to eliminate the challenges of determining the number of clusters and ease their interpretation, the *k*-means cluster technique was employed. This technique offered the advantage of determining the number of clusters before the iteration process. This was used because no standard objective selection exists, as there was no internal statistical criterion available for drawing inferences such as an *F*-test or *t*-test (Babin and Mitch 1998; Bergkvist and Rossiter 2007; Hair et al. 2010).

This study formed four clusters by considering the sample size (72 responses). This was done in order to align them to typologies (analyser, defender, prospector, reactor) suggested by Miles and Snow (1978), although the intention was not to validate whether these typologies existed in the South African construction industry but to have a number that will be illustrative and easy to interpret. The clusters that were derived, as well as the means and standard deviations for each variable, are presented in Table 1. There are altogether 16 construction organizations in cluster one, 25 in Cluster 2, 12 in Cluster 3 and 19 in Cluster 4. Based on the results of the clustering, the mean and standard deviation were calculated for the strategic behaviour among the different groups. A mean comparison with the entire sample was carried out (with SPSS) in identifying the best strategic behaviours among different groups.

The ANOVA results presented in Table 2 illustrate the competitive strategy variables that contributed to the formation of the four clusters using the approach reported in Dikmen et al. (2009). One-way ANOVA procedure was used across the clusters for each of the constructs, using the Bonferroni method. The Bonferroni method was used to test whether there were significant differences in the impact of the constructs on the clusters because this is considered the most robust of the univariate methods, most importantly in terms of power and control of Type 1 error rate. The Bonferroni's test indicated that there were statistically significant ($p < 0.05$) difference across the clusters in terms

Table 1. Groups derived from cluster analysis.

Strategic attributes	Cluster1 (n = 16) Mean (SD)	Cluster2 (n = 25) Mean (SD)	Cluster3 (n = 12) Mean (SD)	Cluster4 (n = 19) Mean (SD)
Differentiation strategy				
Achieving high quality beyond the requirements in the specification	3.81 (0.75)	4.68 (0.56)	4.17 (0.39)	4.79 (0.79)
Being highly responsive to clients' requests	3.50 (0.73)	4.44 (0.71)	3.92 (0.51)	4.05 (0.78)
Achieving on-schedule performance in construction operations	3.75 (0.77)	4.76 (0.44)	3.50 (0.80)	4.05 (0.91)
Attempting to deliver constructed facilities ahead of schedule	4.06 (1.06)	4.68 (0.63)	3.50 (0.52)	3.79 (0.85)
Cost-leadership strategy				
Emphasis on operating efficiency (e.g. productivity in production or efficiency in outbound logistics)	3.13 (0.72)	4.40 (0.65)	4.67 (0.49)	4.05 (0.70)
Emphasis on efficiency of securing raw materials or components (e.g. bargaining down the purchase price)	3.94 (0.85)	4.12 (0.60)	3.67 (1.07)	4.21 (0.85)
Emphasis on tight control of selling/general/ administrative expenses	3.88 (0.81)	4.20 (0.71)	4.67 (0.49)	4.47 (0.77)
Emphasis on price competition (i.e. offering competitive prices)	3.19 (0.65)	4.28 (0.74)	4.50 (0.67)	4.11 (0.74)
Focus strategy				
Targeting a clearly identified segment (e.g. emphasizing a provincial region or a specific group of consumers)	4.06 (0.93)	4.28 (0.74)	3.58 (0.90)	4.16 (0.60)
Offering specialty products tailored to a particular group of customers or users	4.00 (0.73)	4.20 (0.82)	3.42 (0.79)	4.11 (0.87)
Uniqueness of your products (e.g. unique function or design)	3.50 (0.63)	4.16 (0.80)	4.50 (0.52)	4.32 (0.75)
Offering products suitable for a high-price segment	4.44 (0.73)	4.32 (0.80)	4.42 (0.89)	2.79 (0.53)

of competitive strategies used and human resources and capabilities employed, while insignificant difference were noticed between the clusters with respect to organizational characteristics, performance and the environments. Strategic behaviour with the highest value in the cluster column made the most contribution to the separation of the clusters. Considering each of the strategies, achieving on-schedule performance in construction operations had the highest contribution to the partition of the clusters formed under differentiation strategy. Placing emphasis on operating efficiency made the highest contribution within the cost-leadership strategy; while offering products suitable for a high-price segment made the largest contribution under the focus strategy.

Table 2 reveals that strategy is the key determinant of performance differentials in different strategic clusters (Dikmen et al. 2009). Offering or executing contracts for a high-price segment has the highest contribution overall. This suggests that many of the construction organizations focused on government projects, with over 50% of procured contracts coming from the government (Dlungwana et al. 2002). The research employed size and age of the organizations as control variables as used by Kale and Arditi (2002) to control the potential influence that resources and capability might have on organizational performance, especially the objective measures. Table 3 presents the background information of the sampled organizations, including their cidb grades, class of works, years of working experience, and size of the organizations in terms of number of permanent employees. Table 4 shows the differences in the impacts of all the constructs in performance among the clusters with all the constructs (also variables) showing insignificant F-values, with the exception of human resources and competitive strategies.

Table 2. ANOVA of k-means cluster analysis.

Strategic attributes	Mean square		F	Sig.
	Cluster	Error		
Differentiation strategy				
Achieving high quality beyond the requirements in the specification	3.766	0.422	8.922	0.000
Being highly responsive to clients' requests	2.950	0.500	5.896	0.001
Achieving on-schedule performance in construction operations	5.701	0.522	10.918	0.000
Attempting to deliver constructed facilities ahead of schedule	4.859	0.626	7.767	0.000
Cost-leadership strategy				
Emphasis on operating efficiency (e.g. productivity in production or efficiency in outbound logistics)	7.096	0.432	16.433	0.000
Emphasis on efficiency of securing raw materials or components (e.g. bargaining down the purchase price)	.847	0.668	1.269	0.292
Emphasis on tight control of selling/general/ administrative expenses	1.764	0.517	3.412	0.022
Emphasis on price competition (i.e. offering competitive prices)	5.226	0.504	10.370	0.000
Focus strategy				
Targeting a clearly identified segment (e.g. emphasizing a provincial region or a specific group of consumers)	1.360	0.609	2.232	0.092
Offering specialty products tailored to a particular group of customers or users	1.765	0.657	2.684	0.053
Uniqueness of your products (e.g. unique function or design	2.882	0.507	5.686	0.002
Offering products suitable for a high-price segment	11.808	0.492	24.002	0.000

Table 3. Comparison of background information of construction organizations.

		Cluster 1	Cluster 2	Cluster 3	Cluster 4
Grades of organizations	Grade 7	44%	52%	75%	32%
	Grade 8	31%	24%	25%	16%
	Grade 9	25%	24%		53%
Class of works	GB	37%	48%	33%	26%
	CE	37%	20%	33%	26%
	GB&CE	25%	32%	33%	47%
Age (years of existence of organizations)	1–5	6%	–	–	–
	6–10	12%	24%	41%	16%
	11–20	19%	24%	41%	26%
	21–30	25%	28%	8%	10%
	>30	37%	24%	8. %	47%
Size (no. of permanent employees)	0-99	31%	28%	33%	21%
	100–199	37%	48%	58.33%	31%
	500 & above	31%	24%	8%	47%

GB, general building; CE, civil engineering.

Therefore, based on the results of the cluster analysis and ANOVA results shown in Tables 1–4, it can be inferred that four strategic groups or orientations are in existence within the South African construction industry among the categories of organizations considered (Grade 7–9). The discussion provided here is based on the results from all the tables and the means comparison with the entire sample forming the basis for the identification of the exceptional behaviour of different clusters as used in previous similar studies (Dikmen et al. 2009; Tan et al. 2012).

Cluster 1: This cluster consisted of 16 large construction organizations in South Africa across the three grades considered (Grades 7–9). These organizations had slightly above average returns on investment annually, and their substantial length of existence gave them the experience needed to survive the intense business environment. Their main area of business included both civil engineering and general building works. The strategic focus of the group was on providing products suitable for a certain segment of the industry. This implies that the group adopted a differentiated focus strategy to increase their share of the market and in the pursuit of performance excellence. In comparison to other clusters, the ranking with respect to the use of decision-making styles that enhance superior performance was higher in the group than in Clusters 3 and 4. The group places higher emphasis on human resources capability to achieve their objective than did group 3. This may be as a result of the flexible structure and style of making decisions which allowed subordinates to contribute to their decision-making process.

Cluster 2: This strategic group consisted of 25 construction organizations with an average yearly return on investment of R252 million. That value was higher than the average in Cluster 1. The cluster had the second highest number of Grade 7 construction organizations and they pursued a strategy that allowed them differentiate their works or service from the industry competitors. They focused on achieving on-schedule performance in their construction operations and offered competitive prices to achieve optimum performance level. This group had a medium sized number of employees with good working experience, based on their years of existence in the construction business. The group had the highest ratings with regard to decision-making; this may be as a result of a simple level of communication due to

Table 4. Strategic clusters based on performance, organizational characteristic, strategies environment, resources and capabilities.

Variables	Cluster 1 (n = 16) Mean (SD)	Cluster 2 (n = 25) Mean (SD)	Cluster 3 (n = 12) Mean (SD)	Cluster 4 (n = 19) Mean (SD)	F	Sig.
Performance						
competitor's effectiveness	4.168 (.58)	4.260 (.57)	3.865 (.37)	4.175 (.53)	1.516	0.218
Objective achievement	4.083 (.37)	4.207 (.34)	4.071 (.41)	4.210 (.25)	0.841	0.476
ROCE	200(213)	253. (483)	134 (182)	1321 (3242)	2.013	0.120
Organizational characteristics						
Decision-making style	4.354 (.48)	4.373 (.45)	4.000 (.72)	4.316 (.46)	1.583	0.202
Management style	3.557 (.67)	3.886 (.59)	3.869 (.49)	3.701 (.57)	1.219	0.309
Organizational structure	3.875 (.51)	3.970 (.65)	3.917 (.36)	3.882 (.55)	0.133	0.940
Competitive strategies						
Differentiation	3.78 (.83)	4.63 (0.58)	3.773 (0.56)	3.948 (0.83)	24.470	0.000
Cost leadership	3.515 (0.76)	4.25 (0.67)	4.378 (0.68)	4.21 (0.77)	7.396	0.000
Focus	4.00 (0.76)	4.24 (0.79)	3.98 (0.72)	3.843 (0.69)	3.158	0.030
Resources /capability						
Financial capability	4.141 (.50)	3.910 (.42)	4.188 (.24)	4.132 (.60)	1.441	0.238
Human resources capability	3.912 (.42)	3.987 (.42)	3.861 (.54)	4.271 (.35)	2.822	0.045
Technological capability	3.354 (.36)	3.557 (.39)	3.544 (.46)	4.668 (.39)	1.378	0.257
Dimensions of environment						
Competitive intensity	3.813 (.45)	4.120 (.47)	4.208 (.46)	4.079 (.50)	1.981	0.125
Complexity	3.917 (.56)	4.080 (.61)	3.889 (.73)	3.912 (.61)	0.424	0.737
Dynamism	3.656 (.47)	3.920 (.58)	3.750 (.55)	3.724 (.63)	0.833	0.480
Munificence	4.172 (.43)	4.150 (.47)	3.917 (.51)	4.197 (.58)	0.883	0.454

the moderate size of the organizations, which may have assisted the organizations in combining differentiation and focus strategy to enhance their performance. However, they had the least financial capability based on the ratings among the groups. Hence, focusing on civil engineering works that are capital intensive may not be good for this cluster. This was reflected in the class of work they focused on (48% general building).

Cluster 3: This cluster comprised 12 construction organizations and had the highest number of Grade 7 organizations (75%). There were no large Grade 9 construction organizations in this category. The cluster consisted of comparatively small construction organizations, most of which pursued cost-leadership and focus strategies. The major strategic attributes of this group was that they placed high emphasis on price as a way of competing in the turbulent environment. It was obvious by comparing the means across the cluster for cost-leadership strategy that organizations in this cluster adopted cost-leadership strategies to pursue their overall organizational objective of being market cost leaders. This cluster cut across all classes of works. They had medium sized number of employees, which may have assisted them in finding ways to develop sustainable growth strategies. This may also have simplified and speeded up decision-making and communication processes within the organizations.

Cluster 4: The organizations belonging to this strategic group consisted of large construction companies with turnover above R1 billion. The majority of the organizations were leaders in the marketplace with a well-defined strategic focus and formulated strategy. When drawing comparison with other clusters, the level of experience and size of their employees were higher than other clusters. This strategic group exhibited higher strategy context as identified by Dikmen et al. (2009) in terms of resources and capability (with the mean values ranging from 4 to 5). The construction organizations in this category did not compete on the basis of price but strove to differentiate in terms of quality and innovative ideas. Many of the organizations perceived that they were operating in a highly munificent environment that supported a differentiation strategy. In addition, these companies had an abundance of resources that allowed them compete internationally. Almost 80% of them had over 10 years of work experience in the construction industry.

Discussion of results and the impact of clusters

This study examined whether the identified clusters differed from each other with respect to the impact of environmental dimensions, sustained competitive advantage based on resources and capability, as well as whether organizational characteristics contributed to the differences in performance. The discussion is therefore centred on mean comparison between clusters as insignificant differences were observed as found in previous studies (e.g. Dikmen et al. 2009; Tan et al. 2012).

The results presented in Table 4 show that there were no significant differences in the performance among the clusters based on the outcomes of the one-way ANOVA test. All the strategic groups had high mean values for the measures of performance except Cluster 3 that showed lower value in terms of competitor's effectiveness. This implies that there were abundant opportunities for organizations to grow. This is consistent with the assertion of the cidb (2012) that 75% of the total contracts procured in the public sector were being executed by these elite organizations which made up just 7% of all the registered construction companies in the country. However, using mean comparison, it was observed that construction organizations in Cluster 4 outperformed construction organizations in other clusters in terms of their objective performance (ROCE) and objective achievement. It is obvious from the one-way ANOVA procedure that utilizing human resources capability to the fullest had significant influence on the performance of construction organizations, because of the significant differences between their means. Therefore, organizations within this strategic group confronted the problems posed by the intensely competitive environment in the industry through differentiation. The organizations are analysers as they set themselves apart from their industry competitors by achieving superior quality, using skilled human resources with innovative ideas.

Construction organizations in Cluster 2 outperformed organizations in Clusters 1 and 3 in terms of all the measures of performance. They had performance levels above the mean values of Clusters 1 and 3, but lower than that of Cluster 4 in terms of objective and subjective achievement measures. Cluster 2 was less capable financially than Clusters 1 and 3, but exhibited stronger decision-making style than all the clusters. Cluster 2 confronted the challenges caused by the construction industry by placing emphasis on finishing projects ahead of schedule and by focusing on provincial regions or a specific group of consumers to attain sustained competitive advantage.

Organizations in Cluster 1 showed better performance than those in Cluster 3 across all the measures of performance, but their performance was lower than the sample mean values. They paid attention to decision-making process but possessed poor technological resources. Nonetheless, they addressed the industry challenges by offering products suitable for certain segments of the

industry, which is a characteristic feature of defenders (Miles and Snow 1978; Tan et al. 2012). Organizations in Cluster 1 operated in the same intense business environment as other clusters, but with poor technological resources. This perhaps accounted for their lower performance.

Organizations in Cluster 3 had the poorest performance rating in comparison to other clusters. It is apparent that these organizations placed much emphasis on tight control of marketing, general and administrative expenses and their operation efficiencies as a way of meeting the challenges posed by the construction industry. This perhaps led to poor human resources utilization that impaired their performance. Their attention was on maintaining industry cost leadership without adequate attention to the mode of competition, due to the adversarial relationship that is often associated with the lowest tender syndrome in the industry (Kale and Arditi 2002; Price 2003). Based on their performance level, this cluster exhibited the characteristics of industry reactors.

The findings from this analysis are not consistent with those of Dess and Davis (1984), who found significant differences in the performance of manufacturing companies using Porter's generic strategies. The results however, show that there were differences in the objective measures of performance among the clusters; but this was not significant, as found by Reger and Huff (1993) when return on assets was used. Moreover, this study found that there were no significant differences in the reaction of construction organizations to business environmental dimensions. This is in line with the findings of Tan et al. (2012), who found insignificant differences among four strategic groups identified within the Hong Kong construction industry. In almost all the constructs considered, except human resources capability, most of the organizations exhibited analogous characteristics so that there were no significant differences between the clusters. This may be as a result of the strict regulations and ordinances posed by competition law in the country. This result was consistent with the findings of Warszawski (1996) who argued that human resources are the most critical resources and the key to construction organizations' success in the industry. This was corroborated by Sun and Pan (2011) who considered human resources as essential in pursuing a differentiation strategy.

Overall, these findings were consistent with Claver et al.'s (2003) research findings among Spanish housing construction organizations. Their research examined the linkage of strategy clusters and performance using Porter's generic strategies to identify four strategic groups; however, the empirical results found no statistically significant differences among the clusters in terms of performance. Furthermore, the results implied that though different construction organizations pursue different strategies to achieve superior performance, the differences in performance can be partially explained by their choices in terms of mode and scope of competition, even when they function in the same environment (Kale and Arditi 2002).

Therefore, based on the performance of each strategic group, Cluster 4 can be characterized as analysers (having shown the highest performance). Clusters 1 and 2 are defenders and prospectors, respectively (with performance relatively lower than that of the analysers but approximately closer to each other) (Miles and Snow 1978). However, Cluster 3 exhibited the characteristics of reactors, with lowest performance and poor ability to respond to changes in the environment.

Conclusions and recommendations

This study examined the linkage of strategic clusters and performance of South African organizations, using Porter's generic strategies to determine whether differences exist between clustered organizations in terms of performance, characteristics, resources and capability and how the companies achieved strategic fit within different environments. Four strategic groups that were significantly different in terms of competitive strategies used and human resources/capabilities employed were identified. Further the study found insignificant difference between the clusters with respect to organizational characteristics, performance and the environments in the South African construction industry. These identified strategic clusters gave a picture of the representation and characteristics of construction organizations in the South African construction industry. Based on these findings, it is concluded that for an organization to succeed and survive the turbulent and challenging construction environment in South Africa, it would have to vary its strategy continuously, rather than relying on a specific strategy.

This study is not without its limitations. Strategic cluster affiliation is not the major factor that determines organizational performance as there may exist significant differences within a cluster as a result of valuable, rare, inimitable, and non-substitutable (VRIN) resources/capabilities that accrue to different organizations. Also, the influence of the constructs considered on organizational performance has been based on cross-sectional data collection which may likely make the findings difficult to be generalized especially for performance predictive purposes of clusters. This is owing to the fact that cluster performance may change as the

business environment is very unstable due to its hyper-competitive nature.

The South African construction industry experienced a downturn after the 2010 FIFA World Cup competition, and hence organizations operating in the industry needed to have a rethink or perhaps re-strategize to meet both their short- and long-term objectives. The findings presented here would provide construction organizations with the requisite knowledge to enhance their strategies to further improve their performances. This can be achieved by obtaining a strategic fit with the business environment using their rare and imitable resources/capabilities. The results presented in this paper reflected the realities of the South African construction industry; therefore, the result cannot be generalized as it is country specific. However, it is recommended that a strategic analysis of organizations' environments that assists in identifying whether the resources at the disposal of organizations can support their strategic decisions should be conducted. This may lead to the identification of industry competitors, clients, and the prospective strategies for their growth in markets. Therefore, an extensive examination of the influence of strategic analysis on organizational performance would complement the findings from the current study.

Disclosure statement

No potential conflict of interest was reported by the authors.

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