



Impact of business diversification on South African construction companies' corporate performance

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Abstract

Purpose – The purpose of this paper is to investigate and examine whether there is any significant relationship between the extent of business diversification and the performance of construction firms in South Africa. The rationale for the examination stems from the view that the relationship between diversification and the performance of construction firms raises important issues in strategic management and cross-border business. In contractors' growth however, there is a dearth of empirical research and theoretical arguments regarding the effects of business diversification on construction company performance in South Africa.

Design/methodology/approach – The study employed the use of a case study and archival approaches using semi-structured interviews to elicit primary qualitative and quantitative data over a period of five years for large construction companies listed in Grade 7-9 on the Construction Industry Development Board (cidb) contractor register. The scope of services and geographic diversification are computed from the sourced data. Dependent variables are the measure of performance using Return on Total Asset (ROTA), Return on Capital Employed (ROCE) and Profit Margin (PM); independent variables used are service/Product Diversification (PD) and Geographic Diversification (GD); while control variables used are size, age, technical capability and capital structure of the construction firms.

Findings – It emerged that established construction companies on the cidb contractor registers perform and diversify more in their service/product better than the newly upgraded contractors and this was evident in their performance with respect to profit margin. The results also indicated that there are no statistically significant differences in the performance of diversified and undiversified firms, although diversification was found to have a positive impact on the corporate performance of construction companies.

Originality/value – The outcomes of the research are useful to decision makers and managers of construction companies, as they will help in making viable corporate strategic diversification decisions. The study also engenders a better understanding of the effect of both product and geographic diversification on the performance of contractors.

Keywords Construction industry, Corporate strategy, Business performance, Diversification, South Africa

Paper type Research paper



Introduction

Construction firms operate in a complex and fragmented construction industry environment where different projects or firms exhibit unique characteristics coupled with the ever changing demands of the industry's stakeholders, combining different investors, clients, contractual arrangements and consulting professions (cidb, 2012). This growing and complex nature of the business environment demands that an organisation look inward and outward and diversify their operations in a way that can help the company attain and sustain success in a hyper-competitive market (Ibrahim *et al.*, 2009).

Different definitions and outcomes of performance have effects on different types of diversification (such as related, unrelated, and geographic) and these exist in strategic and international business literature (Mayer and Whittington, 2003; Chakrabarti *et al.*, 2007; Wiersama and Bowen, 2008; Ravichandran *et al.*, 2009). Many of the definitions available in literature define or discuss diversification of firms from an international point of view (Capar and Kotabe, 2003; Hitt *et al.*, 2006; Wiersama and Bowen, 2008). For instance, Capar and Kotabe (2003) define geographic diversification as a firm's expansion beyond the borders of its home country across different nations and geographical regions. Within the context of this paper diversification is defined as organisational spread beyond its local borders to another market (sub-sector) within the industry or region (geographic) to improve business performance by reducing inherent risk and to enhance returns. The diversification under discussion here is not beyond internal borders of a firm's home country. This is premised on the earlier position of Ibrahim *et al.* (2009) that geographic diversification refers to company's growth or expansion beyond its borders, which may be internal or external.

Despite the wealth of knowledge and research linking performance effects of both product and geographic diversification, even within the strategic management, finance and international business circle, there are still inconsistencies in the outcome of the studies and as such scholars persist in their inquiry (Mayer and Whittington, 2003; Chakrabarti *et al.*, 2007; Wiersama and Bowen, 2008). There is sparse literature on diversification focusing on the construction industry, the reason being that construction management is relatively an innovative field of research compared to other areas, so it becomes essential to tap from both natural and social sciences to enhance performance of the field (Knight and Ruddock, 2008).

Singh *et al.* (2010) assert that the major motive for a company's diversification into different product categories and geographic markets is to satisfy its growth and corporate strategic objectives. Higgins and Vincze (1993) cited in Ofori and Chan (2000) note that the growth of firms requires some considerations. These were categorised into four namely: the type of growth (diversified); its geographical focus; how it will take place; and how quickly it will occur. Based on the classifications, it thus means that for a firm to achieve the desired growth, diversification of business is essential. Cidb (2012) corroborates this by maintaining that a geographic spread and product diversification are necessary growth spurs within the South African construction industry. Tallman and Li (1996) and Qian (1997) insist that many firms evolve the decisions to diversify both geographically and in term of product market without adequate knowledge of the long-term effects on the firm. Many of the studies carried out on diversification focus mainly on large firms and there has been lack of consensus in their outcomes. Some of the studies report that positive relationship exists between joint performance effects of product and geographic diversification (Kim *et al.*, 1993;

Hitt *et al.*, 1997; Singh *et al.*, 2010) while some report that the relationship is negative (Tallman and Li, 1996). In spite of this acknowledged importance of strategic objectives, little attention has been given to it in the construction industry. Kim and Reinschmidt (2012) corroborate the opinion that much of the available knowledge on strategic issues at the corporate or industry level is mostly descriptive rather than quantitative, and useful empirical findings are limited.

Considering the dearth of empirical research and theoretical arguments on the effects of business diversification on construction company performance, this paper intends to help fill this gap by examining whether the level of diversification evident in construction companies and pinpointed by the cidb has an effect on its corporate performance, and also establishing whether it is important for construction companies to diversify in order to benefit from accrued opportunities available in other product (sub-sectors) and geographic markets (Teo, 2002).

Concept and types of diversification

Mintzberg *et al.* (2009) and Grant (2005) argue that diversification of firms either to different markets or products stems from the company's corporate strategy, which takes into consideration different business strategies that enhance corporate performance and development such as diversification strategies and market concentration. Pearce and Robinson's (2007) view is that market concentration strategy of a company allows a firm to focus and direct all its resources to ensure the growth of a single business or product in a single market making use of dominant technology to increase returns on assets. This was explained further by Pearce and Robinson (2007) as it entails a company intensifying efforts on performing better on what the company is known for by drawing on available strengths and opportunities to do things in a more productive way and using new methods to eliminate the risk of losing focus. Kotler and Armstrong (2008) posit that corporate diversification strategy involves a firm acquiring and setting up business intra or inter outside its core business (product) or geographic location (market).

On this note, diversification of firms is premised on the three identified possible ways to diversify by Srivastava (1994) which includes: dominant product strategy – limiting operations to a single product line to establish the company as the leading, most efficient producer in its industry and growing through innovation to attract new customers and expand geographically; related diversification – operating in related multiple businesses to gain flexibility, diversify risks and use resources more efficiently; and conglomerate diversification – operating a group of diverse, unrelated businesses. In another classification, David (1993, p. 62) refers to the following diversification approaches: concentric – adding new, but related, products or services; horizontally – adding new, unrelated products or services for present customers; and conglomerate – adding new, unrelated products or services. Therefore, these discussions are relevant to the South African construction industry where contractors operate in different provinces and diversify to different classes of works such as general building works, civil engineering, mechanical and electrical services, property developers, plant hirers. However, the study considers it necessary to draw explanation from the previous studies as discussed above in order to appreciate the pertinence of this concept as it relates to the research and the South African construction industry in particular.

Overview of the effect of diversification on corporate performance

Previous studies on the impact of diversification on corporate performance have been incongruous due to the different types (such as related, unrelated, and geographic); and that levels of diversification on performance differ (Ravichandran *et al.*, 2009). Further, it has been established by Lim and Teck (1995) that there is distinctiveness in the diversification strategies of developing countries; while Nachum (2004) found that diversification interest in developed countries is different from that of developing countries. Jiang *et al.* (2005) in addition noted that diversification strategies of firms in developed countries appears to be fundamentally different from that of developing countries because transferability of knowledge based on the former to the latter is limited. The performance effects of diversifications are discussed under the following headings as listed below.

Geographic diversification

Geographic diversification (GD) of a construction company in the context of this study will mean the organisational spread of a company beyond its local borders or corporate head office to another region which may be internal (within the country) or external (beyond the borders of the country) (Capar and Kotabe, 2003; Ibrahim *et al.*, 2009). Singh *et al.* (2010) categorised previous studies on the performance effects of GD into three namely; research that focuses on establishing the relationship between GD and firm performance without much attention to contingency factors; research that focuses primarily on the contingency conditions affecting GD performance relationship; and that which explores the relationship in different empirical settings. All these studies produced mixed results with respect to performance effects of GD; the incongruities in the results vary from positive relationship (Delios and Beamish, 1999; Annvarajula *et al.*, 2005; Hitt *et al.*, 2006; Singh *et al.*, 2010), negative relationships (Geringer *et al.*, 2000; Denis *et al.*, 2002), an inverted U-shaped relationship (Geringer *et al.*, 1989; Hitt *et al.*, 1997; Capar and Kotabe, 2003; Singh *et al.*, 2010); an S-shaped relationship (Contractor *et al.*, 2003; Lu and Beamish, 2004); to lack of relationship among the variables (Dess *et al.*, 1995).

Many of these studies investigate the diversification-performance relationships in the international context and mostly amongst large firms, either in manufacturing or service firms. This many account for the variations in their results. Capar and Kotabe (2003) and Singh *et al.* (2010) support this opinion by positing that it is unassuming to have different results across studies considering the time-lag, country of study, types of firms studied and industries focused on by researchers. However, within the construction industry, earlier studies on the growth of construction companies in the USA and Singapore agreed with some of the authors that found negative relationships between GD and the performance of firms (Siddharthan and Lall, 1982; Ofori and Chan, 2000). While Ibrahim *et al.* (2009) affirm the position of Dess *et al.* (1995) that there is no relationship between GD and performance, as there was not difference noticed when measures of performance were compared with diversification groups.

Product diversification

Many authors have written on the performance effects of product diversification (PD) (Datta *et al.*, 1991; Palich *et al.*, 2000; Wiersama and Bowen, 2008; Singh *et al.*, 2010). They have documented evidence on the resultant benefits and prices associated with PD, as well as exigency factors that influence the benefits and costs of PD

(Singh *et al.*, 2010). Wiersama and Bowen (2008) posit that earlier theory suggest that reasons for corporate strategic objectives regarding expansion via product or international diversification by companies is based on their opportunity to leverage the firm's excess resources into new markets. Many companies diversify into different regions or product markets for a myriad of reasons, such as economies of scale and scope, as well as to increase market share (Teece, 1982; Markides and Williamson, 1996). Some also diversify to reap the full benefit of optimal utilization of existing resources and capabilities (Markides and Williamson, 1994; Wiersama and Bowen, 2008) and for reasons risk dispersion and safeguarding future business uncertainties (Lubatkin and Chatterjee, 1994; Berger and Ofed, 1995). Wan and Hoskisson (2003) assert that firms that exhibit higher levels of PD are more likely prone to insufficient resources and managerial difficulties that are capable of impeding their ability to develop global competitive advantages.

Lubatkin and Chatterjee (1994) contend that no single business firm is capable of taking advantage of the collaborations that may be available across a portfolio of businesses. But, Wiersama and Bowen (2008) assert that the level of a firm's PD can be expected to influence the degree and scope of a firm's international diversification. Chi (1994) as cited in Singh *et al.* (2010) state that product diversification could be beneficial if it remains within the scope of the firm. Singh *et al.* (2010) found that an inverted U-relationship exists between PD and a firm's performance as well as positive interaction in their study carried out amongst SMEs. Thus, PD is capable of increasing companies' returns and reducing business risk, though not without its own negative effects.

In this study, PD refers to a firm's diversification to more than one class of work as calibrated by the cidb of South Africa such as general building works, civil engineering, mechanical and electrical services, property developers, plant hirers and so forth.

Research methodology

The impacts of company diversification on performance have been comprehensively studied in strategic management, finance and international business literature but much of the research focused on the economic rationale behind the diversification – performance linkage (Ravichandran *et al.*, 2009; Singh *et al.*, 2010). The research adopts case study and archival approaches using semi-structured interviews to elicit primary qualitative data on the level of company geographic and product diversification from the responding companies. Secondary data were also sourced to obtain financial data required in assessing the level of performance of the companies for a period of five years.

Population of the study and sample size

The sample for this study consists of active large contracting firms listed in Grades 7-9 on the cidb contractor register. The data used for the research were sourced from that cohort of firms because of their continuous upgrade at least three times within a period of five years (2006-2010) on the cidb contractor register. The dominance of these firms is evident in the large number of contracts that have benefited from which was estimated to be around 75 per cent of the total public sector contracts (cidb, 2012). A total of 679 firms were found to be active on the cidb contractor register at the time this research was carried out. Of this number, 62 construction companies located across South Africa were found to have met the research criteria of company upgrade and performance. All 62 contracting companies constituting the sample were invited

via e-mail and later by telephone due to low response rates to participate in the study. At the end of six weeks, 14 contractors responded to the e-mail and telephone invitation, representing a 22.57 per cent response rate. Four established contractors selected with a convenience sampling technique were also used as control for the study.

Statement of hypotheses

Ofori and Chan (2000) assert that diversification of firms draw most attention of companies that desire growth. They posited further by citing Pearson (1990) who warns that, through diversification, the firm may lose sight of its strategic corporate objectives of growth and improved returns because its parts would have no single unifying purpose. Wiersama and Bowen (2008) posit that corporate strategic objectives regarding diversification by firms via product or geographical diversification based on the opportunity to leverage their firm's strategic excess resources into new markets are capable of causing increased market risk diversification as reported by Ibrahim *et al.* (2009). Also, Singh *et al.* (2010) contends that increased PD will only enhance performance of firms to a certain stage after which the performance drops. Owing to the earlier studies by Ofori and Chan (2000), Wiersama and Bowen (2008), Ibrahim *et al.* (2009) and Singh *et al.* (2010), who investigated the effects of company diversification on corporate performance empirically, the study proposed and tested the following hypotheses:

- H1. There is a positive relationship between product diversification and firm's corporate performance.
- H2. There is a positive relationship between geographic diversification and firm's corporate performance.
- H3. There is a positive relationship among product diversification, geographic diversification and corporate performance of a firm.
- H4. There is a performance difference between diversified and undiversified firms in terms of product and geographic diversification.

Measures of geographic and product diversification variables

Several measures of diversification exist in the literature but the most frequently used measure is the "foreign sales ratio", which is expressed as a firm's foreign sales divided by its total sales (Grant *et al.*, 1988; Tallman and Li, 1996; Geringer *et al.*, 2000; Capar and Kotabe, 2003). Other measures as suggested by Ibrahim *et al.* (2009) include foreign employee ratio and foreign assets ratios, the entropy of a firm's sales across geographic market regions (Hitt *et al.*, 1997), the ratio of exports to total sales, and the ratio of foreign to total employees (Kim *et al.*, 1989). Ibrahim *et al.* (2009) assert further that many of these approaches have been criticised as they focus on the overall strategic importance of foreign operations to a firm. This research adopts the approach used by earlier researchers (Jiang *et al.*, 2005; Ibrahim *et al.*, 2009; Singh *et al.*, 2010) in measuring the variables. The explanatory variables are product diversification and geographic diversification.

Product diversification

PD is measured by adopting the Herfindahl index as used in Tallman and Li (1996) and Singh *et al.* (2010). This was based on the total number of contracts won and executed

in the equivalent of a cidb category. Businesses in the same cidb grade level are treated as homogeneous and distinctions are made with those in different cidb categories as used by Jiang *et al.* (2005).

Mathematically:

$$PD = 1 - \sum_{i=1}^n S_i^2$$

where:

S_i is the proportion of firm's contracts in i th class of work (product) category.

Geographic diversification

GD of the firm is determined by the ratio of contracts won outside its local province to the total number of contracts won for the period under consideration. This measure of geographic diversification is in conformity with the previous studies (Tallman and Li, 1996; Capar and Kotabe, 2003; Singh *et al.*, 2010).

Control variables

Control variables include the size of firms, age of the firms, technical capability and firms' capital structure (working capital). Size of firms which is depicted by the number of contracts won, is used to control for scale of economies and diseconomies as used by Singh *et al.* (2010) and it is measured by the natural logarithm of a firm's total contracts won. Age of the firm is measured by the total number of years the company has been in existence and active in the industry till the time of the investigation. The study controls the technical capability is controlled because of the central position it occupies in the firm's performance, this is measured by the number of employees on its payroll. Capital structure was viewed by Muzir (2011) as the combination of funds, in the form of debt and equity, a firm uses to finance its asset investments of the firms. Thus, this is controlled by cash the position which simply means the amount in cash held by company in its bank account to finance projects. This is underpinned by Maravas and Pantouvakis (2012) that the difference between project expenditures and payments determines the necessary capital reserves accrued to firms on a project and thus cash flow is crucial for the assessment of working capital requirements for successful contract execution.

Measures of corporate performance

Ibrahim *et al.* (2009) maintain that there are many measures of a firm's performance available as demonstrated by researchers such as Ofori and Chan (2000) who state that the index of performance measurement of firms includes sales revenue, volume of output, market share, profit, number of personnel, number of branches and the extent of geographical spread. Earlier studies on performance effects of diversification employed different accounting measures ranging from return on total assets (ROTA) by authors such as Pandya and Rao (1998), Ibrahim *et al.* (2009) and Singh *et al.* (2010) and return on investment (ROI) (Hall and St John, 1994; Markides and Williamson, 1995; Palich *et al.*, 2000; Jiang *et al.*, 2005). Return on total asset (ROTA), Return on capital employed (ROCE) and profit margin (PM) are used as measures of a firm's performance and the dependent variables in this study and will employ the following as measures.

Return on total assets (ROTA, %). This is defined as the profit before taxes expressed as a percentage of total assets. It is an indicator of both profitability and the growth of a firm.

Calculated as:

$$(Pre\ tax\ profit/total\ assets)*100\%$$

Return on capital employed (ROCE, %). This is a measure of both profitability and growth as it measures how effective and efficient firm's management is in the business with respect to using its funds in growing the size of the business itself. This is the profit before tax shown as a percentage of the capital employed, where capital employed is taken to be the aggregate of the shareholders' funds, long term loans, and long term liabilities. It is simply defined as the ratio of profit before interest and tax to total assets less current liabilities.

Calculated as:

$$Profit\ before\ interest\ and\ tax / (Shareholder's\ Funds + Long\ Term\ Loans + Other\ Long\ Term\ Liabilities) * 100\% \text{ or } PBIT/TA - CL$$

where:

PBIT = profit before interest and tax.

TA = total asset.

CL = current liabilities.

Profit margin (%). This according to Weetman (2003) cited in Ibrahim *et al.* (2009) reiterates that Profit Margin, which is also referred to as net profit on sales reflects the degree of competitiveness in the market, the ability to differentiate products, the economic situation and the ability to control expenses. Profit margin is defined as the profit before interest and tax expressed as a percentage of turnover. It is an indicator of profitability and growth and provides a useful comparison for how well the costs have been controlled.

Calculated as:

$$(Profit\ before\ interest\ and\ tax/Turnover)*100\%.$$

Method of data analysis

The research employed parametric statistical methods, the *t*-statistics to compare the means of the two samples (in diversified and undiversified firms). The use of *t*-test is recommended when the samples taken fall below 30 ("Parametric test of significance", 2007). It was further established that in that situation the ratio are not normally distributed and does conform to the *t*-distribution. The study therefore, used *t*-statistics as a result of its strength which implies that it is comparatively indifferent to violations of underlying assumptions of equality of variance and the normality of population distribution from which samples are taken as suggested by Pagano (cited in Ibrahim *et al.*, 2009). The firms were classified to diversified and undiversified, thus analyses of the differences in the performance of the two categories was carried out to suggest actions to be taken on the hypotheses. In doing this, the study employed the use of average annual performance measures.

The Pearson product moment correlation co-efficient was also used to indicate the nature of relationships that exist among the dependent, exploratory and control variables of the sample population. This was used by the study due to the conformity of the data to rules that two variables have to be measured on either an interval or ratio scale but not necessarily on the same scale or completely normally distributed (Bartlett, 1993). Correlation is a statistical technique that measures the degree of closeness or the linear relationship between the variables (Naoum, 2007). The correlation co-efficient measures the strength of the linear relationship that exists between two variables but not necessarily indicate the causativeness, correlation in the range of 70 per cent (0.70) to 90 per cent (0.90) is high, 50 per cent (0.50) to 70 per cent (0.70) is moderate while below 50 per cent is regarded as low or weak (Hikkles *et al.*, 1998 cited in Love, 2002). A positive correlation within the range of $(0 < \rho \leq 1)$ is an indication that significant or greater values of x are related to greater values of y, while the negative correlation $(-1 \leq \rho < 0)$ indicates that greater values of x are related to smaller values of y by Naoum (2007). The balanced longitudinal data collected were also analysed using panel regression. The sourced data is essential because it is more informative, exhibits less collinearity and allow for control of individual construction firm's unobserved heterogeneity which usually constitutes problems in non-experimental research (Bruderl, 2005). Therefore, the analysis takes into consideration Hausmann's test of fixed-random effect and both the random effect and fixed effect estimate as suggested by Oladele (2012).

The longitudinal data model is given as:

$$ROA_{it} = \alpha_0 + \beta_1 SIZE_{it} + \beta_2 GD_{it} + \beta_3 PD_{it} + \beta_4 AGE_{it} + \beta_5 CAPSTRU_{it} + \beta_6 PM_{it} + \beta_7 TECHCAP_{it} + \varepsilon_{it}$$

where:

ROA = return on assets (dependent variable).

SIZE = size of the firms.

GD = geographic diversification.

PD = product diversification.

AGE = age of the firm.

CAPSTRU = capital structure.

TECHCAP = technical capability.

β = parameter to be estimated.

ε = error term.

i = *i*th firm.

t = period of time measured in years.

Analysis and discussion of results

Table I shows the results of descriptive statistics and correlation coefficients. 76 per cent of the firms considered diversified both geographically and in terms of product while 23 per cent remain undiversified. The descriptive statistics indicate that the average

	MEAN	SD	TECHCAP	AGE	PD	GD	ROTA	ROCE	PM	SIZE	CAP STRU
TECHCAP	268.46	401.91	1								
AGE	22.08	10.87	0.31	1							
PD	0.38	0.25	0.64*	0.23	1						
GD	0.40	0.26	0.55	0.19	0.90**	1					
ROTA	18.81	16.32	0.08	0.14	-0.10	-0.10	1				
ROCE	70.13	116.32	-0.12	-0.22	-0.40	-0.39	0.74**	1			
PM	6.11	5.05	0.40	0.68*	0.34	0.26	0.56*	0.09	1		
SIZE	1.53	0.20	0.51	0.22	0.85**	0.96**	-0.01	-0.24	0.25	1	
CAP STRU	19.80	39.76	0.85**	0.27	0.51	0.47	0.10	-0.02	0.51	0.47	1

Notes: Correlation is significant at: *0.05 and **0.01 levels; key: TECHCAP – technical capability, PD – product diversification, GD – geographic diversification, ROTA – return on total asset, ROCE – return on capital employed, PM – profit margin, CAPSTRU – capital structure

Table I.
Descriptive statistics and
correlation of variables

age of firms involved in the study is 22 years. The mean values indicate the average values or sizes of the variables considered. The mean values of the proportion of contracts won by the firms' in different classes of work (PD) and the ratio of contracts won outside its local province to the total number of contracts won for the period under consideration GD are 0.38 and 0.40, respectively.

The correlation analysis results of the tested variables indicated that low positive relationships exist between GD, PD and PM (34 and 26 per cent for GD and PD, respectively), this shows that the more diversified firms are, the higher the profit margin. This result was in affirmation of the earlier findings of Zook (2001) who posits that firms that diversify around their core business (concentric diversifications) have a higher success rate than other approaches to diversification. Weak negative correlations were also found to exist among measures of a firm's performance (ROTA and ROCE) and diversification which indicates that as firms diversify, the returns both on asset and capital employed decreases. The result agrees with the findings of Ofori and Chan (2000) who reported that a negative relationship exists between a firm's geographic diversification and corporate performance. This also underpinned the findings of earlier studies that firms which exhibit higher levels of product or geographic diversification are more likely prone to insufficient resources and more market risk which lead to a drop in returns (Wan and Hoskisson, 2003; Wiersama and Bowen, 2008).

The results of the correlation indicate a strong positive relationship between GD and PD and this shows that firms that diversify (concentric diversification) or extend to other provinces will enjoy an increased market share and improve returns as indicated by the relationship between PD, GD and profit margin. This finding agrees with the results of previous studies carried out by Kim *et al.* (1993), Hitt *et al.* (1997) and Singh *et al.* (2010). Size of firms exhibit high positive relationships with PD and GD with values of $r = 85$ and 90 per cent, respectively. This shows that greater diversification (PD & GD) is associated with large values or number of contract won by the diversified firms. The age of firms indicates that established firms enjoy more improved returns on investment.

Figure 1 shows the aggregate trends in the performance of the construction companies studied. It emerged that the corporate performance indicators depict peaks and valleys and a general inconsistency among the performance of the companies.

Table II shows the longitudinal data regression result. The result of the analysis indicates that profit margin of construction firms is positive and significant at 1 per cent. This shows that as a firm diversifies the return on assets grows. The result of GD affirms this, coefficient of GD was found to be positive, implying that construction firm that spread provincially had a higher return on assets than those that diversified to related products (PD) as this indicates a negative. This finding of the panel regression affirms the result of Delios and Beamish (1999) that positive relationship exists between GD and the firm's corporate performance as it motivates the company to acquire knowledge-related assets of different markets in different regions, such as technological improvement and physical assets.

The negativity demonstrated by PD is affirmative of previous researchers' stance (Servaes, 1996; Delios and Beamish, 1999; Singh *et al.*, 2003) that PD is a destroyer of a firm's value and thus, exhibits negative non-linear relationship with corporate performance. Size of construction firm shows a positive result, implying that an increase in firm size will enhance the firm's diversification as demonstrated in

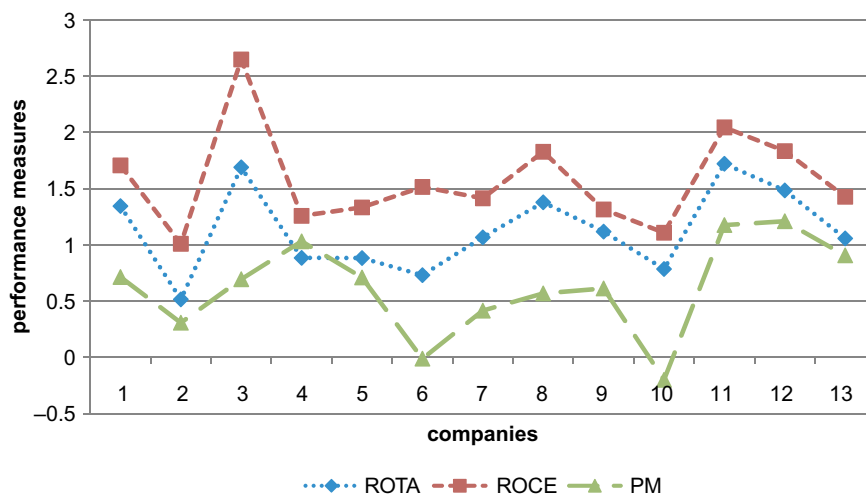


Figure 1.
Aggregate trends in
corporate performance
of the construction
companies

Variables	Coefficient	SE	β
PM	1.88	0.425***	2.122
SIZE	5.543	3.72	0.905
CAPS	-0.339	0.15*	-0.93
TECHCAP	0.32	0.283	0.43
AGE	-1.826	0.494***	-1.157
PD	-6.569	3.353*	-1.454
GD	1.132	3.809	0.263
(Constant)	1.496	0.6**	
R^2	0.855		

Table II.
Result of regression on
construction company
diversification and
corporate performance
(ROA)

Note: Significant at: * $p < 0.10$, ** $p < 0.05$ and *** $p < 0.01$

a research conducted by Oladele (2012). Also, the capital structure (leverage) of the firms shows a negative result and the significance at 10 per cent, this indicates that the total debt and equity value or level of the firms may influence the extent of the company's diversification decision and improved level of performance. Singh *et al.* (2003) contend that though leverage provides a firm with investment opportunities, leverage diversification effects are not related positively to a firm performance. The result of the correlation analysis in Table I refutes this, as both GD and PD of construction firms considered are positively related to the company's capital structure.

Tables III-V show the results of comparison of performance measures of both the diversified and undiversified firms considered for the study. *T*-statistics was used to test whether there are significant differences in the performance of both diversified and undiversified firms and this was used at a 95 per cent confidence interval of the alternative hypothesis. The decision rule is dependent on whether the *t*-calculated are greater than or less than the critical values of *t* for ($n - 2$) degree of freedom.

Table III.*t*-test statistic –
undiversified firms vs
diversified (PM)

	Undiversified firms	Diversified firms
<i>t</i> -test: two-sample assuming equal variances		
<i>Average annual PM</i>		
Mean	0.572929366	0.6424967
Variance	0.05250024	0.2251653
Observations	3	10
Pooled variance	0.193771637	
Hypothesized mean difference	0	
df	11	
<i>t</i> -stat.	-0.240076244	
$P(T \leq t)$ one-tail	0.407343191	
<i>t</i> (critical one-tail)	1.795884819	

Table IV.*t*-test statistic –
undiversified firms vs
diversified (ROCE)

	Undiversified firms	Diversified firms
<i>t</i> -test: two-sample assuming equal variances		
<i>Average annual ROCE</i>		
Mean	1.788693788	1.508166955
Variance	0.676061787	0.089100238
Observations	3	10
Pooled variance	0.195820519	
Hypothesized mean difference	0	
df	11	
<i>t</i> -stat.	0.963017684	
$P(T \leq t)$ one-tail	0.178115754	
<i>t</i> (critical one-tail)	1.795884819	

Table V.*t*-test statistic –
undiversified firms vs
diversified (ROTA)

	Undiversified firms	Diversified firms
<i>t</i> -test: two-sample assuming equal variances		
<i>Average annual ROTA</i>		
Mean	1.183787319	1.1115951
Variance	0.364037396	0.1045031
Observations	3	10
Pooled variance	0.151691186	
Hypothesized mean difference	0	
df	11	
<i>t</i> -stat.	0.281578443	
$P(T \leq t)$ one-tail	0.391746683	
<i>t</i> (critical one-tail)	1.795884819	

Across the three measures of performance, the measures employed in this study, the results indicated that no performance differences exist between the two groups of study. This is demonstrated by the values of *t*-calculated which was less than the critical values of *t*, the results are statistically insignificant and thus an alternative hypothesis is rejected. This result affirmed the findings of Ibrahim *et al.* (2009) carried

out in the context of the UK construction industry ($n = 20$) that no performance differences exist between the two groups with respect to the measures of performance employed.

Conclusions and further research

This study investigated the impact of geographic and service/product diversifications on the corporate performance of firms in the South African construction industry. The research postulated statements of hypotheses to examine the level and nature of the relationship that exists among the variables. This research adds to the understanding of the effects of both geographic and product diversification on corporate performance in the construction industry. With reference to the postulated hypotheses, we found that corporate performance is higher in construction firms that diversify into many regions and this also indicates a positive correlation with the returns on assets. GD and PD were found to be positively related to profitability but PD exhibited negative association with corporate performance. Overall, an alternative hypothesis was rejected as no significant positive relationship was apparent. Thus, the result of the study explains that geographic expansion (market diversification) of construction firms to different region was an effective business strategy for enhancing the corporate performance of construction firms in South Africa. This is inconclusive and further studies with a larger sample size and longer time need to be investigated in order to validate this and investigate the impact of time. The study recommends that firms considering diversification should also ensure they diversify around its core business area where it has competitive advantage to add value or added advantage to traditional business to improve performances and reduce risk.

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Further reading

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