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Evaluating the Impact of Product Diversification on Financial Performance of Selected Nigerian Construction Firms

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Abstract: The need for the improved performance and continuous survival of construction firms has caused firms to diversify into other businesses. The purpose of this study is to determine the influence of diversification on the performance of some Nigerian construction firms. Financial statements from seventy construction firms were analysed. The specialisation ratio method was used to measure and categorise the firms into undiversified, moderately diversified and highly diversified firms, and profitability ratios were used to measure the group-wise performance of the firms. The Student t-test was used to test the relationship between the extent of diversification and performance. The findings reveal that undiversified firms outperform the highly diversified firms in terms of Return on Total Assets and Profit Margin. Similarly, the moderately diversified firms were found to outperform the highly diversified firms in terms of Return on Equity, Return on Total Assets and Profit Margin. However, no performance difference was found between the undiversified firms and the moderately diversified firms based on the three measures used. A nonlinear relationship was found between the extent of diversification and performance. It was concluded that diversification does not necessarily lead to an improvement in profitability. The implication is that firms are better-off remaining focused if the aim is to improve financial performance.

Keywords: Diversification, Financial performance, Specialisation ratio

INTRODUCTION

The poor state of the Nigerian economy, the drive for privatisation and the impact of globalisation have made the construction industry very volatile, more competitive and less profitable, thus making survival in the industry very challenging. This increased volatility and competiveness of the industry has made the industry more vulnerable to fluctuations in demand, thereby aggravating the situation and making survival more crucial (Aminu, 2006). To survive in such a competitive environment, construction firms must have sound strategic planning and management frameworks. A firm's survival is dependent upon its ability to adapt successfully to the changing environment, and strategic planning is one tool to manage such environmental turbulence (Ringbakk, 1972; Baum and Wally, 2003). However, Winch

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(1989) in Ibrahim and Kaka (2007) noted that much of the published works on construction management focus on the management of construction projects rather than on the firm. While the importance of the effective management of these construction projects cannot be overemphasised, the success of these projects depends to a great extent on the successful management of the firms that undertake these projects. Choi and Russel (2005) observed that the success of a firm depends, in turn, on strategic decisions because these decisions determine the business mix of the firm. They further observe that the need for such strategic decisions, especially amongst construction firms, arises from the volatility of the construction markets.

As current workloads do not guarantee future workloads, because of fluctuations in demand, firms need to extend their range of business operations outside those in which they are currently engaged (Cannon and Hillebrandt, 1989; Teo, 2002). Accordingly, the current study examined the impact of product diversification on the performance of construction firms in Nigeria in order to uncover the benefits and consequences of the strategy for construction firms.

Diversification is defined as the entry of a firm into new lines of activities either by the process of internal expansion or by acquisition (Ramanujan and Varadarajan, 1989). It is also defined as the process by which firms extend the range of their businesses outside those in which they are currently engaged (Cannon and Hillebrandt, 1989). This definition encompasses the directions of diversification, which include vertical and horizontal integrations.

A diversified firm can therefore be considered to have operations in more than a single industry (Ibrahim and Kaka, 2007). Diversification increases the range of a firm's investment opportunities, as it permits a company to take advantage of the more profitable opportunities in sectors of the economy in which it previously had no activities (Pawaskar, 1999).

The diversification strategy, according to Palepu (1985), is an important component of the strategic management of a firm, and the relationship between a firm's diversification strategy and its economic performance is an issue of considerable interest to managers and academics. The volatility of the construction market makes the strategic decision to diversify through knowing the correct combination of a company's strength and business mix very important for a firm to survive and keep up with its competitors (Teo, 2002). Studies both within and outside the construction management literature, such as Ibrahim and Kaka (2007) and Palich et al. (2000), have sought to determine the impact of diversification on the performance of firms. The findings of these studies are inconsistent.

PRODUCT DIVERSIFICATION

Although many studies abound on the diversification-performance relationship (Ofori and Chan, 2000; Choi and Russel, 2004) and why firms diversify or refuse to diversify (Hua and Pheng, 1998; Cho, 2003), the findings are somewhat inconsistent. For example, Choi and Russel (2004) found that the profitability growth rate of undiversified firms was lower than that of diversified firms. In contrast, Ofori and Chan (2000) found that undiversified firms have performed better by remaining focused despite the perceived risks and uncertainties resulting from inherent fluctuations. Furthermore, Teo and Runeson (2001) found that substantial proportions of firms are not prepared for diversification; rather, they elect to operate in one market only despite the advantages of diversification.

Some studies assert that diversifying into related product markets produces higher returns than diversifying into unrelated product markets, and less diversified firms have been argued to perform better than highly diversified firms (Christensen and Montgomery, 1981; Rumelt, 1974; 1982). Some claim that the economies in integrating operations and core skills obtained in related diversification outweigh the costs of internal capital markets and the smaller variances in sales revenues generated by unrelated diversification (Datta et al., 1981). While they agreed that related diversification is better than unrelated diversification, Prahalad and Bettis (1986) clarified that it is the insight and the vision of the top managers in choosing the right strategy (how much and what kind of relatedness), rather than diversification per se, that is the key to successful diversification. Accordingly, it is not product-market diversity, but the strategic logic that managers use, that links firm diversification to performance, which implies that diversified firms without such logic may not perform as well. However, others argue that it is not management conduct so much, but industry structure, which governs firm performance (Christensen and Montgomery, 1981; Montgomery, 1985).

In addition to diversification types and industry structure, researchers have also looked at the ways that firms diversify. Simmonds (1990) examined the combined effects of breadth (related vs. unrelated) and mode (internal research and development versus Mergers and Acquisitions) and found that relatedly diversified firms are better performers than unrelatedly diversified firms, and research and development-based product development is better than mergers and acquisition-led diversification. However, the results of studies on acquisitions are inconsistent. Some report that related acquisitions are better performers than unrelated ones (Kusewitt, 1985) while others report that there is no real difference between them (Montgomery and Singh, 1984).

Product Diversification in the Construction Industry

In the construction industry, strategic management issues have recently gained attention, and managers recognise their importance for firm survival and success (Choi and Russel, 2005). However, the number of strategic management practices in the construction industry that have reached the implementation or measurement stage remains limited at best (Chinowsky, 2001). The construction industry is known to be highly competitive and generally poor in terms of profitability. An investigation into the possible reasons for the differences in profitability among firms by Akintoye and Skitmore (1991) showed that the degree and type of diversification are major factors. The subject of diversification is hence an important consideration in a construction firm's strategy (Ibrahim and Kaka, 2007).

Studies have shown that construction firms diversify into both related and unrelated businesses (Ibrahim and Kaka, 2007). According to Langford and Male (2001), UK contractors operate in five main business areas: civil engineering, building, property development, estate development and construction product development. In addition, Hillebrandt and Cannon (1990) identified such other activities as time share, form work, healthcare, waste disposal, mechanical and electrical engineering and mining.

Hillebrandt (1996) asserted that the most important activities into which large contractors diversified were construction related. These activities include housing development, property development and material production, especially aggregate as well as sand and gravel. An investigation into the possible reasons for diversification indicated that growth and profit, as well as the desire to make good use of positive cash flows, are the major reasons for diversifying into property. She also identified boat building (in one case) and meat processing as other areas.

Cho (2003) found that some Korean house building firms diversify into totally unrelated businesses, such as forestry and logging, sales of motor vehicles, the hotel and restaurant business and financial institutions, while others diversify into related businesses such as civil engineering, plant hire and property development.

Ofori and Chan (2000) asserted that the more successful Singaporean contractors diversify into both construction-related and construction-unrelated businesses both at home and overseas. They found that the most common construction-related business Singaporean contractors diversify into is property development. Non-construction-related areas into which contractors diversify include commerce, material manufacture and securities trading.

RELATIONSHIP BETWEEN PRODUCT DIVERSIFICATION AND PERFORMANCE

The link between diversification and corporate performance is one of the most researched topics in strategic management, yet there does not seem to be available robust knowledge, and empirical studies are often contradictory. The variation in the results of empirical studies is so large that it often leads to confusion and contradicting interpretations (Mohindru and Chander, 2007).

A review of the empirical literature from Management/Marketing disciplines and the theoretical and empirical literature from Finance broadly reveals that (a) the empirical evidence is inconclusive; (b) models, perspectives and results differ based on the disciplinary perspective chosen by the researcher; and (c) the relationship between diversification and performance is complex and is affected by intervening and contingent variables such as related versus unrelated diversification, the type of relatedness, the capability of top managers, industry structure and the mode of diversification (Pandya and Rao, 1998).

Synergy theories, according to Markides (1992), suggest that a firm may achieve benefits from low to moderate levels of diversification through the sharing of activities or leveraging of competencies among its business units up to a point and then would be faced with higher marginal costs with respect to the increased marginal benefits. Thus, this interplay between synergies and limits would suggest an inverted U-shaped relationship between the level of diversification and business unit performance.

Rumelt (1974) compared the performances of corporations pursuing related diversification strategies with those of corporations pursuing unrelated diversification strategies. He found that related diversification strategies produced higher performance than unrelated diversification strategies. He also found significant performance differences between related firms on the basis of the relatedness strategy they were pursuing. Furthermore, Montgomery (1985) and Bettis and Hall (1982) claimed that a related diversification strategy is more profitable than a single industry strategy and that a single industry strategy is more profitable than an unrelated diversification strategy.

Recognising that the inconsistencies in reported findings may be attributable to differences in methodologies and to sampling errors, Palich et al. (2000) conducted a study that synthesised over three decades of research on the impact of diversification on firm performance. They found that diversification is related to both accounting and market performance outcomes. For both the market- and accounting-based measures, diversification appears to be positive for firms up to a

certain point. Beyond this point, diversification seems to cause problems. In general, they concluded that the relationship is an inverted-U, with related diversification being superior to unrelated diversification for both the market- and accounting-based measures. It is clear that the findings regarding the impact of diversification and firm performance are inconsistent, at least in the non-construction research fields.

In the construction industry, the theoretical and empirical evidence regarding the diversification-performance relationship are also somewhat mixed. Ofori and Chan (2000) found that Singaporean construction firms have grown by focusing their operations at home and into contracting, despite the perceived risks and uncertainties due to inherent fluctuations in constructions. However, Choi and Russel (2005) found that the profitability growth rate of focused firms in the US was lower than that of diversified firms, implying that diversified firms have some growth advantage. Hillebrandt (1996) found that diversification by UK contractors into other businesses has not been successful. Similarly, Ibrahim and Kaka (2007) concluded that diversification does not help the performance of UK construction firms.

It is clear that both construction and non-construction firms adopt diversification strategies both as a short term survival strategy and as a long term growth strategy with varying results. Additionally, the relationship between diversification and performance is inconsistent both within and outside the construction industry. These inconsistencies have been attributed to differences in methodologies and to sampling errors.

Although these studies have made significant contributions to the field of strategic management, they are, however, not contextually applicable to Nigeria because of differences in business environments. The level of competition, general economic conditions and government regulations vary from country to country. Thus, construction companies are exposed to different challenges depending on the country in which they operate. This study therefore addresses this shortcoming by appraising the impact of the diversification strategy on the financial performance of construction firms in Nigeria. Uncovering this impact will elucidate the nature of the diversification-performance relationship in the Nigerian context and will also prove invaluable for managers in formulating appropriate future strategies to survive the highly volatile and competitive construction market.

HYPOTHESES

In reviewing the various conflicting theoretical and empirical arguments regarding the nature of the relationship between the extent of diversification

and performance, Palich et al. (2000) identified two theoretical models. The first is a linear model, which is based on the notion that the extent of diversity and performance are linearly and positively related, implying that highly diversified firms should outperform moderately diversified firms and that moderately diversified firms should outperform undiversified firms. The second is a curvilinear model, which suggests that some moderate level of diversification is better than none and that beyond a certain optimal point, diversification begins to yield dissatisfying results. Thus, it is evident that it is difficult to conclude the exact nature of the relationship; hence, the following hypotheses were stated:

$H1_0$: There is no significant difference in performance between the undiversified and the moderately diversified firms.

$H2_0$: There is no significant difference in performance between the undiversified and the highly diversified firms.

$H3_0$: There is no significant difference in performance between the moderately diversified and the highly diversified firms.

The objective of this study is to determine the nature of the relationship between performance and the extent of product diversity in the Nigerian construction industry. Uncovering this relationship will enable managers to make better informed decisions on survival strategies.

RESEARCH METHOD

Data Collection

The research involved the collection of data from Nigerian construction firms for the purpose of measuring the extent of diversification and its impact on profitability. The principal data consisted of the value of turnover from each firm's business segments, as well as each firm's equity capital and profit for each year during the period considered (1997–2001). The period was chosen because of the economic and political instability at that time as a result of change in the government from military to military and from military to civilian rule. The period also captures the post-Petroleum (Special) Trust Fund (PTF) intervention in various sectors of the economy, including construction, during which the industry experienced a boom in construction activities. However, when the Trust Fund was scrapped by the civilian administration in 1999, many construction companies experienced a sharp fall in demand, which made survival difficult. This fall in demand resulted in some companies closing, while others diversified into other businesses in order to survive. The data collected were used in measuring the extent of diversification and group-wise performance of the firms.

The companies studied included both quoted and unquoted companies on the Nigerian Stock Exchange. The financial data of the quoted construction companies were collected from the Cashcraft Asset Management Consultants' Database. Cashcraft provides financial news, ratings, earnings and stock data for all the publicly quoted companies on the Nigerian Stock Exchange. The search strategy adopted sought construction companies that are active and that have available financial records covering the period. Companies that did not have complete records were excluded.

The financial data of the unquoted construction firms were collected through field surveys. Questionnaires were randomly administered to construction firms to determine whether they had engaged in any other businesses apart from their core business of construction and to assess the turnover from those diversified businesses (if any) over the study period. Additionally, the financial statements of the companies showing the balance sheet and the profit and loss accounts were collected as a detailed breakdown of the companies' financial transactions. When necessary, personal contacts were employed in obtaining the desired information. This approach was adopted because many companies in the industry do not readily release their financial information to unknown persons because of business and or security reasons.

To achieve a large representation of various companies, a sample of 200 construction companies based in Nigeria was selected, to which the following filters were applied:

1) Companies that did not have at least ten years of experience in the industry were not considered.

2) Companies incorporated during the time period from 1997 to 2001 were eliminated.

3) Companies that went bankrupt immediately after the PTF era were also eliminated.

As a result of these filters, out of the 200 companies, a population size of 150 companies was obtained.

Out of the 150 companies, 70 construction firms that undertook business in Nigeria within the study period were randomly administered questionnaires. Fifty-five were fully completed and returned, representing 79% of the firms. Thirty companies (43%) were found to have diversified into other businesses. A breakdown of the 30 firms revealed that five (17%) were category B construction companies, ten (33%) were category C construction companies, and 15 (50%) were category D construction companies. None belonged to category A. These categorisations were made with respect to the size of the contract (in Naira) that they can handle,

according to the Federal Ministry of Works' classification. 27% of the firms are listed on the stock exchange, while 73% are not listed.

A total of 12 companies supplied the complete financial statement that was requested, while ten supplied an incomplete financial statement. Eight did not supply any financial statement at all. Therefore, the analysis of the financial data obtained was based on these 12 companies, representing 40% of the companies that diversified. The data set used may seem inadequate. This incompleteness resulted from the high rate of incomplete financial information obtained from some firms and the slightly high occurrence of non-response resulting from concerns over data confidentiality, despite the assurance given by the researchers that only aggregate data would be reported.

Measurement of Diversification

The data collected from the construction firms were analysed using the Specialisation Ratio (SR) method of measuring diversification. The specialisation ratio, according to Rumelt (1974), is a ratio of the firm's annual revenues from its largest discrete product-market (core product-market) activity to its total revenues. The logic of the ratio is that it reflects the importance of the firm's core product market to that of the rest of the firm. In the diversification literature, SR has been one of the methods of choice for measuring diversification, as it is easy to understand and calculate (Pandya and Rao, 1998). Chatterjee and Blocher (1992) assert that the specialisation ratio is an entirely objective measure, especially if the same data source is used for information on sales in each business. The analysis provided a basis for classifying the firms into undiversified, moderately diversified and highly diversified organisations according to the classification provided in Table 1.

If a firm's turnover from its dominant business is between 70% and 95% of its total turnover, then according to the classification, such a firm is moderately diversified. A firm is highly diversified if the turnover from its dominant business is less than 70% of its total turnover.

Measurement of Performance

Performance is defined as the level of profitability of a business unit and is measured by operating profits

Table 1. Values of Specialisation Ratios in Rumelt's Scheme

Groups	SR Values in Rumelt's Scheme
Undiversified Firms	SR ≥ 0.95
Moderately Diversified Firms	0.7 ≤ ASR < 0.95
Highly Diversified Firms	SR < 0.7

Key: SR means Specialisation Ratio and **ASR** means Average Specialisation Ratio.
Source: Ibrahim and Kaka (2007)

divided by identifiable assets. Common measures of performance in terms of profitability are market share, revenue growth, and so forth; the two most commonly used terms in the corporate literature are accounting measures and measures of financial market premiums (McGahan, 1999).

The data obtained were analysed by calculating the different financial ratios, such as Return on Total Assets (ROTA), Return on Equity (ROE) and Profit Margin (PM), in order to measure the financial performance of the construction firms. These measures, according to Akintoye and Skitmore (1991), have been used to measure firm performance in the construction industry. The idea behind these measures is to evaluate managerial performance, i.e., how well a firm's management is using the assets to generate accounting returns per unit of investment, assets or sales (Kakani, 2002).

The common performance measures used to measure performance according to Palepu (1985), Pandya and Rao (1998), and Hamilton and Shergill (1993) are as follows:

1) **Return on Equity (ROE):** This measure is the ratio of net income (income available to common stockholders) to stockholders' equity. It is a measure of company performance from the viewpoint of the shareholders. Return on equity (ROE) is a frequently used variable in judging the top management performance and for making executive compensation decisions (Pandya and Rao, 1998). It is essential when calculating ROE to use the profit for ordinary shareholders, which is the profit after tax and after interest charges (Weetman, 2003). It is expressed as:

$$\text{ROE} = \frac{\text{Profit after Tax}}{\text{Share Capital + Reserves}} \times 100\%$$

2) **Return on Total Assets:** This measure is the most frequently used performance measure in previous studies of diversification (Pandya and Rao, 1998). ROTA is defined as the ratio of net income (income available to common stockholders) to the book value of total assets. It is expressed as:

$$\text{ROTA} = \frac{\text{Profit before Interest and Tax}}{\text{Total Assets}} \times 100\%$$

3) **Return on Capital Employed (ROCE):** This ratio is a measure of how efficient management is in using long-term finances to generate operating profits. It is defined as the ratio of profit before interest and tax to total assets less current liabilities and is calculated as follows:

$$ROCE = \frac{\text{Profit before Interest and Tax}}{\text{Total Assets} - \text{Current Liabilities}} \times 100\%$$

4) **Profit Margin**: Weetman (2003) suggests that profit margin (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. The aim of most successful managers is to make the margin as high as possible. Profit margin is defined as the ratio of net profit (before interest and tax) to turnover (Weetman, 2003) and is calculated as follows:

$$PM = \frac{\text{Net Profit before Interest and Tax}}{\text{Turnover}} \times 100\%$$

Statistical Procedure

The test of the difference between two means using the Student t-statistic was conducted in order test the null hypotheses regarding the diversification-performance relationship. The t-statistic is a parametric test that assumes equal variances for the samples being compared. It is used to compare the means of two samples when the sample size is 30 or less and when the population standard deviation is not known (Levin and Rubin, 1997). According to the decision rule of the t-statistic, a significant difference exists between the two variables if the calculated value of t (t stat) is greater than or equal to the critical value (i.e., the table value). A one-tailed test was used at a 95% confidence interval.

ANALYSIS

Firm Classification According to the Extent of Diversification

To classify the firms according to the extent of their diversification, each firm's annual specialisation ratio was first computed. This computation was achieved by dividing a firm's annual revenue from its largest single business activity (business line that generated highest turnover) by the firm's total annual revenue.

To compute the Specialisation Ratio (SR) of Samvaz Nigeria Limited in 1999 (refer to Table 2), for instance, the turnover figures of the business unit that recorded the highest turnover (Building & Civil Engineering with a sales of N858,037,000) was divided by the total turnover of the firm in that year (N1,075,637,000). The same was repeated for all the years, and an average was then computed for the whole period to obtain the Average Specialisation Ratio (ASR).

Table 2. Average SR of Samvaz Nigeria Limited

Business Line	Turnover(N)	Specialisation Ratio
31/10/2001		
Building & Civil Engineering	1,000,966,000	
Plant Hire	25,000,000	
Furniture	40,900,000	
Investment & Development	80,000,000	
Property Development	285,000,000	
Total Annual Turnover	**1,431,866,000**	**0.70**
31/10/2000		
Building & Civil Engineering	314,085,000	
Furniture	84,000,000	
Investment & Development	180,000,000	
Total Annual Turnover	**578,085,000**	**0.54**
31/10/1999		
Building & Civil Engineering	858,037,000	
Plant Hire	35,000,000	
Furniture	85,000,000	
Quarry	97,600,000	
Total Annual Turnover	**1,075,637,000**	**0.80**
31/10/1998		
Building & Civil Engineering	963,707,000	
Plant Hire	16,040,000	
Furniture	44,800,000	
Investment & Development	200,000,000	
Quarry	120,000,000	
Total Annual Turnover	**1,344,547,000**	**0.72**
31/10/1997		
Building & Civil Engineering	1,115,289,000	
Plant Hire	10,000,000	
Furniture	150,000,000	
Property Development	320,200,000	
Quarry	85,000,000	
Total Annual Turnover	**1,680,489,000**	**0.66**
	Average SR	**0.68**
	Status	**Highly Diversified**

Table 3. Results of Categorisation of Study Sample into HDF, MDF and UDF

Company	ASR	Status
Gold Construction Nigeria Limited	0.64	**HDF**
Arbico Nigeria Plc	0.65	"
Samvaz Nigeria Limited	0.68	"
Z.B.C.C. Nigeria Limited	0.73	**MDF**
Julius Berger Nigeria Plc	0.82	"
Costain (W.A) Plc	0.82	"
G.B Technical Nigeria Limited	0.83	"
G Cappa Nigeria Plc	0.89	"
Adnan Enterprises Nigeria Limited	0.90	"
Alinat Enterprises Nigeria Limited	0.95	**UDF**
Habeeb Engineering Nigeria Limited	0.95	"
Impresit Bakalori Plc	0.98	"

Key: HDF means highly diversified; **MDF** is moderately diversified, and **UDF** is undiversified.

The computations for all the other companies were performed in the same way; however, they are not shown for the sake of brevity. Table 3 presents the results of the categorisation of the firms according to their extent of diversification and ASR.

As shown in Table 3, three firms (25%) are highly diversified, six firms (50%) are moderately diversified, and another three firms (25%) are undiversified.

Table 4 shows the nature of the businesses the companies diversified into. Eighty-three per cent of the firms diversified into plant hire, 57% undertook block making, and 40% adopted sales of sand and gravel. Generally, 78% of the diversified businesses are construction-related.

Table 5 shows the direction of diversification adopted by the construction firms. Of the types of the businesses undertaken by the firms, 36% of the businesses adopt backward diversification, 21% adopt forward diversification, and 42% adopt horizontal diversification.

Measurement of Performance

A group-wise performance measurement of the firms was conducted on the basis of the three performance measures mentioned. The results of the computation shown in Tables 6 to Table 8 are the averages of the undiversified group. A similar computation was performed for all the other groups; they are, however, not shown for the sake of brevity.

The performance trend of all the diversification groups is given in Figure 1 to Figure 3 as a group-wise comparison of the firms' performances.

Table 4. Kinds of Diversified Businesses Adopted by the Construction Firms

S/N	Business Lines	Diversified Business	
		No. of Firms	%
1	Quarry	8	27
2	Furniture	2	6
3	Sales of precast components	10	33
4	Plant hire	25	83
5	Sales of some fixed assets	2	6
6	Manufacture of some building materials and components	1	3
7	Investment & development	11	37
8	Poultry	1	3
9	Consultancy	3	10
10	Construction design	4	13
11	Subcontracting	9	30
12	Sales of sand and gravel	12	40
13	Block making	17	57
14	General supply	6	20
15	Property development	7	23
16	Sales of construction materials	8	27
17	Commerce	6	20
18	Supply of construction materials	13	43
19	Securities trading	5	17

Table 5. Breakdown of the Diversified Businesses into Backward Diversification, Forward Diversification and Horizontal Diversification

Backward Diversification	Forward Diversification	Horizontal Diversification
Quarry	Plant hire	Securities trading
Sales of precast components	Sales of some fixed assets	Commerce
Sales of sand and gravel	Subcontracting	Poultry
Block making	Property development	Furniture
Sales of construction materials		General supply
Supply of construction materials		Investment & development
Manufacture of some building materials and components		Consultancy
		Construction design

Table 6. Average Return on Equity (ROE) of the Undiversified Group

Company	Year				
	1997	1998	1999	2000	2001
Alinat Enterprises Nigeria Limited	40.80	67.09	74.71	23.57	61.60
Habeeb Engineering Nigeria Limited	79.54	56.28	50.79	66.64	66.53
Impresit Bakalori Plc	3.32	3.82	-51.09	4.69	6.98
Average Return on Equity	**41.22**	**42.40**	**24.83**	**31.63**	**45.05**

Table 7. Average Return on Total Assets (ROTA) of the Undiversified Group

Company	Year				
	1997	1998	1999	2000	2001
Alinat Enterprises Nigeria Limited	11.14	28.37	17.46	27.73	45.93
Habeeb Engineering Nigeria Limited	10.40	9.30	7.40	1.40	8.20
Impresit Bakalori Plc	1.05	9.64	-3.99	1.07	1.28
Average Return on Total Assets	**7.53**	**15.77**	**6.96**	**10.07**	**18.47**

Table 8. Average Profit Margin (PM) of the Undiversified Group

Company	Year				
	1997	1998	1999	2000	2001
Alinat Enterprises Nigeria Limited	33.84	44.96	38.06	39.63	47.08
Habeeb Engineering Nigeria Limited	21.00	23.60	25.10	22.00	25.20
Impresit Bakalori Plc	0.81	0.27	-8.31	1.77	1.67
Average Profit Margin	**18.78**	**22.94**	**18.28**	**21.13**	**27.65**

From Figure 1, the performance of the highly diversified firms appears to be lower than those of the undiversified and the moderately diversified firms according to the annual profit margin. This result suggests that both the undiversified and moderately diversified firms are more competitive than the highly diversified firms, implying that the former are better at controlling their expenses than the highly diversified firms.

Figure 2 compares the group-wise performance trend of all three diversification categories on basis of the return on total assets. Here, too, the undiversified and the moderately diversified firms seem to perform better than the highly diversified firms. This result could imply that the managements of the highly diversified firms are not very effective at utilising their assets to generate profit.

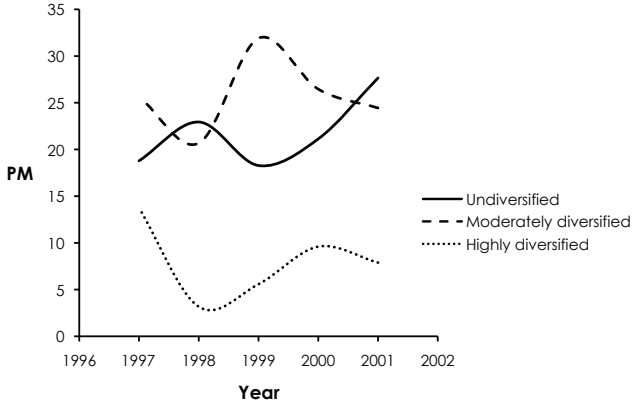

Figure 1. Average Annual Performance for the Groups (PM)

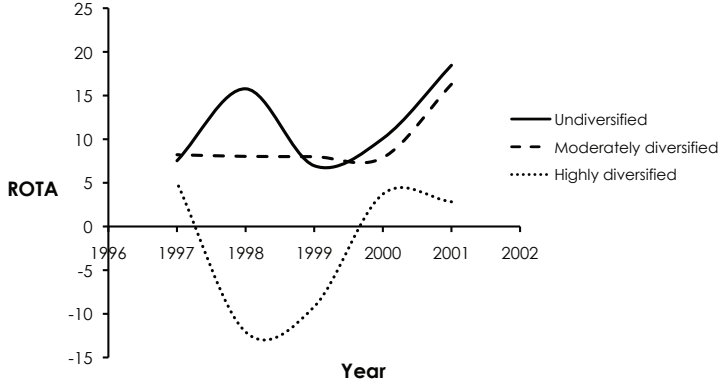

Figure 2. Average Annual Performance for the Groups (ROTA)

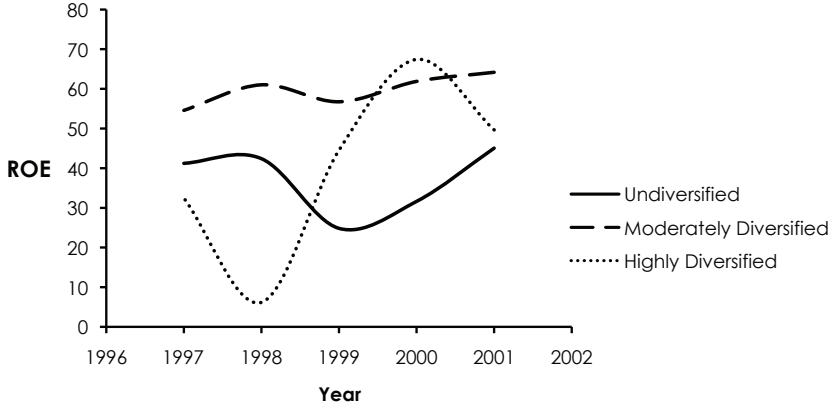

Figure 3. Average Annual Performance for the Groups (ROE)

The low ROTA values reported by the highly diversified group (–12.08 and –9.18) in 1998 and 1999, respectively, could be attributed to the very low ratios reported by two out of the three firms that comprise the group. This situation could have resulted from internal problems within the firms or, perhaps, some other economic problems specific only to them at those times, rather than a general industry situation.

Figure 3 compares the group-wise performance trend of all the three diversification categories on the basis of the return on equity. The moderately diversified firms appear to perform better than the undiversified and the highly diversified firms. The performance of the highly diversified firms appears more erratic and unstable than that of the others when considering the very high and low values reported in 1998 and 2000. This result suggests that the highly diversified firms do not efficiently utilise investors' funds.

Test of Differences in the Group-wise Performances of the Firms

Establishing a relationship between diversification and performance requires testing the following null hypotheses using the parametric t-statistic to compare the differences between the means of the group-wise average annual performance of the firms.

$H1_0$: There is no significant difference in performance between the undiversified and the moderately diversified firms.

$H2_0$: There is no significant difference in performance between the undiversified and the highly diversified firms.

$H3_0$: There is no significant difference in performance between the moderately diversified and the highly diversified firms.

According to the decision rule of the t-statistic, a null hypothesis is rejected if a significant difference exists between the two variables, i.e., if the calculated value of t (t stat) is greater than or equal to the critical value (i.e., the table value). The null hypothesis, however, is accepted if the calculated value of t (t stat) is less than the table value. A one-tailed test was used at a 95% confidence interval.

The results in Table 9 show no performance difference between the undiversified and the moderately diversified firms based on APM. Therefore, the null hypothesis $H1_0$ is accepted, and the alternate is rejected. However, both the undiversified and the moderately diversified firms outperform the highly diversified firms. The null hypotheses $H2_0$ and $H3_0$ are thus rejected.

Table 9. Results of the t-Test for the Difference in Average Profit Margin between Undiversified, Moderately Diversified and Highly Diversified Firms

Group	Mean	Observations	Deg. of Freedom	t-Critical	t-Stat
Undiversified	21.15	3	7	1.895	–0.6791
Mod. Div.	25.832	6			
Undiversified	21.15	3	4	2.132	3.6875
Highly Div.	7.998	3			
Mod. Div.	25.832	6	7	1.895	3.0712
Highly Div.	7.998	3			

Table 10. Results of the t-Test for the Difference in Average Return on Total Assets between Undiversified, Moderately Diversified and Highly Diversified

Group	Mean	Observations	Deg. of Freedom	t-Critical	t-Stat
Undiversified	11.76	3	7	1.895	0.4748
Mod. Div.	9.684	6			
Undiversified	11.76	3	4	2.132	3.2534
Highly Div.	-2.066	3			
Mod. Div.	9.668	6	7	1.895	2.1803
Highly Div.	-2.066	3			

Table 11. Results of the t-Test for the Difference in Average Return on Equity between Undiversified, Moderately Diversified and Highly Diversified Firms

Group	Mean	Observations	Deg. of Freedom	t-Critical	t-Stat
Undiversified	24.978	3	7	1.895	-2.2313
Mod. Div.	58.804	6			
Undiversified	37.024	3	4	2.132	-0.0852
Highly Div.	40.048	3			
Mod. Div.	58.804	6	7	1.895	3.844
Highly Div.	40.048	3			

The results of Table 10 also show no performance difference between the undiversified and the moderately diversified firms based on the Average Return on Total Assets (AROTA). The null hypothesis H10 is therefore accepted. However, both the undiversified and the moderately diversified firms outperform the highly diversified firms. The null hypotheses $H2_0$ and $H3_0$ are once again rejected.

The results of the t-test in Table 11 show no performance difference between the undiversified and the moderately diversified firms and between the undiversified and the highly diversified firms based on AROE. Therefore, the null hypotheses $H1_0$ and $H2_0$ are accepted. However, the moderately diversified firms outperform the highly diversified firms. Hence, the null hypothesis $H3_0$ is rejected.

DISCUSSION

Most of the construction firms that were studied diversified into construction-related businesses, such as construction plant hire, property development, and sales of construction related materials. This finding is similar to the findings of Hillebrandt (1996) and Ibrahim and Kaka (2007) that UK construction firms mostly diversify into construction-related businesses and that of Cho (2003) that Korean house building firms diversify into both related and unrelated businesses. This tendency to diversify into construction-related business could be attributed to the desire of some firms to take advantage of the lack of resources during periods of low demand and the desire to achieve economies of scale and scope. Another possible reason for this finding could be the desire of some companies to increase

their efficiency through the control of supply or linked activities in order to reduce delays in the supply chain. This desire has motivated some firms to enter into backward integration, such as quarrying, block making, supply of construction materials and furniture works. Achieving the efficient utilisation of resources could be another possible reason; this explanation could be associated with forward integration, such as diversifying into property development. For example, Hillebrandt (1996) noted that UK contractors diversify into housing and property development to make good use of positive cash flow.

The majority of the firms studied in Nigeria favoured diversifying moderately rather than remaining undiversified or becoming highly diversified. This observation is consistent with the findings of Ibrahim and Kaka (2007) that the majority of UK construction firms favoured moderate diversification. However, Teo and Runeson (2001) found that substantial proportions of firms in the US are not prepared to diversify; rather, they elect to operate in one market only, despite the advantages of diversification. This phenomenon could be attributed to the fact that some of the diversified firms adopted the strategy as a short term survival plan during periods of low demand rather than as a long-term growth strategy. This is perhaps the reason why some firms entered into horizontal diversification, such as commerce, securities trading, investment, development, and so forth.

While there was no difference in performance between the undiversified group and the moderately diversified group in terms of the ROE, ROTA and PM, the undiversified group was found to outperform the highly diversified group in terms of the ROTA and PM. Similarly, the moderately diversified group was found to outperform the highly diversified group in terms of all the performance measures. This finding suggests that a high degree of diversification does not improve the performance of Nigerian construction firms. This finding may also imply a lack of efficiency in the utilisation of assets by highly diversified firms to generate profit. That is to say, the investors' funds were not used efficiently to generate an adequate return on equity. This finding also implies that the moderately diversified firms exhibited better competitiveness than the highly diversified firms. A high level of diversification may therefore not lure shareholders, as it does not bring in the desired returns on equity. In the same vein, as no performance difference exists between the undiversified and the moderately diversified firms, it implies that shareholders may not be enticed by moderate diversification if the aim is to improve performance. This inability to lure shareholders could affect growth, as investment capital is a major catalyst to the growth of a company.

The results above indicate that the relationship between diversification and performance for the selected Nigerian construction firms is nonlinear. That is, diversification begins to yield unsatisfying results as

its extent increases from moderate to high, suggesting a curvilinear relationship between the extent of diversification and performance in which diversification starts to yield dissatisfying results beyond a certain optimum level. This observation in consistent with the strategic management theories that focus on economies of scope and synergies resulting from diversification. Essentially, the theories posit that "a firm may achieve benefits from low to moderate levels of diversification through the sharing of activities or leveraging of competencies among its business units up to a point, and then would be faced with higher marginal costs respective to increased marginal benefits". Limitations and suggestions for future research

Thus, this interplay between synergies and limits suggests an inverted U-shaped relationship between the level of diversification and business unit performance, in which performance begins to decline as the level of diversification increases beyond an optimum level. This position has been supported by numerous studies (Christensen and Montgomery, 1981; Palepu, 1985; Hamilton and Shergill, 1993; Palich et al., 2000).

CONCLUSION

The main objective was to analyse the relative group-wise performance of undiversified, moderately diversified and highly diversified construction firms in Nigeria. This objective required testing the null hypotheses that there is no significant difference in performance between the undiversified and the moderately and highly diversified firms. The null hypothesis $H1_0$ is accepted, indicating that there is no difference in performance between the undiversified group and the moderately diversified group. Hypothesis $H2_0$ is also accepted based on the ROE, but it is rejected based on the ROTA and PM. However, $H3_0$ is rejected based on all the measures. This finding suggests a nonlinear relationship between the level of diversification and performance. The implication is that a high degree of diversification does not seem to improve performance in terms of profitability. Nigerian construction firms are therefore advised to remain undiversified if their aim is to improve performance.

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