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Performance analysis of small and medium-sized construction firms in Oyo State, Nigeria

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Abstract

This article examines time and cost performance of projects executed by small and medium-sized construction firms with a view to enhancing the firms' capabilities. The study adopted a quantitative descriptive analysis based on primary and archival data. Sixty-eight (68) valid questionnaires obtained from top managers of the firms provided primary quantitative data for the assessment. Secondary data were collected on the initial and final contract sums as well as on the initial and completion times of 184 public projects executed by the firms. Data collected were analysed using descriptive analysis. The findings indicated that the small firms specialised in general building works, while the medium-sized firms specialised in civil works, in addition to general building works. Project values in the case of small construction firms ranged between N1 million and N50 million, while those of medium-sized construction firms ranged between N51 million and N100 million. The performance index (PI) of the projects executed by the firms showed a general underperformance level. Approximately

96.12% and 31.03% of the projects executed by small and medium-sized firms, respectively, had cost performance index (CPI) at budget level (CPI = 1). Meanwhile, 37.42% of the projects executed by the small firms and 24.13% of those executed by medium- sized firms were completed as planned, that is, they had schedule performance index (SPI = 1). The article provides implications for understanding the influence of the construction firms' profile in relation to their PI that could assist in the capability development of small and medium-sized construction firms.

Keywords: Construction firms, cost performance, public projects, time performance, time overrun, cost overrun.

Abstrak

Hierdie artikel ondersoek die tyd en koste prestasie van projekte wat uitgevoer word deur klein en mediumgrootte konstruksiemaatskappye met die oog op die verbetering van die firmas se vermoëns. Die artikel het 'n kwantitatiewe beskrywende analise aangeneem wat gebaseer was op primêre en argiefdata. Agt-en-sestig (68) geldige vraelyste wat van topbestuurders van die firmas verkry is, het primêre kwantitatiewe data vir die assessering verskaf. Sekondêre data is ingesamel op die aanvanklike en finale kontrakbedrae asook aanvanklike en voltooiingstye van 184 openbare projekte wat deur die firmas uitgevoer is. Data wat ingesamel is, is ontleed met behulp van beskrywende analise. Die bevindinge dui op spesialisasie van die klein ondernemings in algemene bouwerke, terwyl die mediumgrootte firmas ook in siviele werke gespesialiseer het. Projekwaardes in die geval van klein konstruksiefirmas het tussen N1 en N50million gewissel, terwyl dié van mediumgrootte konstruksiefirmas tussen N51 en N100million gewissel het. Die prestasie-indeks (PI) van die projekte wat deur die maatskappye uitgevoer is, het 'n algemene onderprestasievlak getoon. Ongeveer 96.12% en 31.03% van die projekte wat uitgevoer is deur die klein en mediumgrootte maatskappye het onderskeidelik die koste-prestasie-indeks (VPI) op begrotingsvlak (VPI=1). Intussen is 37.42% van die projekte uitgevoer deur die klein firmas en 24.13% van dié wat deur mediumgrootte maatskappye uitgevoer is, volgens plan beplan, naamlik dat hulle skedule-prestasie-indeks (SPI=1) gehad het. Die artikel bied implikasies vir die begrip van die invloed van konstruksiefirmas se profiel in verhouding tot hul PI wat kan help met die vermoë-ontwikkeling van klein en mediumgrootte konstruksiefirmas.

Sleutelwoorde: Konstruksiemaatskappye, koste oorskry, koste prestasie, openbare projekte, tyd prestasie, tyd oorskry

1. Introduction

The dynamic role of small and medium enterprises (SMEs), as engines whereby the growth objectives of developing countries can be achieved, has long been recognised (Chilipunde, 2007: 1). Small and medium-sized construction firms have the potential to enhance any nation's growth and development, because they contribute to wealth creation, value re-orientation, job creation, and poverty eradication (Ariyo, 2008: 109; Ilori, 2017: 2). Contracting firm's performance is an important element in project success and a firm's competitiveness has often been explained by the characteristics that define its ability to deliver a project within the parameters of

completion time, estimated cost, and quality satisfaction (Aliyu, Haruna, Ali & Ibrahim, 2015: 11).

In Nigeria, there are over 17.2 million small and medium enterprises that represent approximately 96% of all the businesses that contribute not less than 75% of the national employment (Ilori, 2017: 25). In the construction sector, small and medium-sized construction firms are often not considered by all categories of clients for projects of higher complexities and profitability, for fear of their abilities to meet these parameters. It is the usual practice that 'white elephant projects' are awarded to big/large construction firms that are mostly owned by foreign investors (Mitrofanova, Russkova, Batmanova & Shkarupa, 2015: 274). This scenario has not enabled the potential of small and medium-sized construction firms to be explored in terms of global competitiveness. Besides, there is still a lack of empirical evidence on the possible correlation of construction firm size to project performance that could enable the apportionment of performance criticism of the construction industry to small and medium-sized firms.

While the contribution of small and medium-sized construction firms could be far-reaching in economic development through job creation and gross domestic product (GDP) growth, by improving their delivery capacity (Onugu, 2005: 2; Ogunsemi & Jagboro, 2006: 255; Ilori, 2017: 25), empirical studies on the competitiveness review of this category of firms are generally lacking in Nigeria. Moreover, construction management studies (for example, Ahadzie, 2007; Ihua & Siyanbola, 2012; Odediran, Adeyinka, Opatunji & Morakinyo, 2012; Wang, Lee, Yap & Abdul-Rahman, 2018) focusing on critical project performance indicators have not correlated the possible impact of construction firm size to performance. In this regard, the understanding of the profile of small and medium-sized construction firms and how their characteristics define the type of projects they execute, as well as the time and cost performance of the projects would be highly imperative to put the capacities of the firms into focus. The study would ultimately provide an insight into the implications for enhancing the delivery capacity of the firms in terms of better competitiveness.

2. Literature review

To understand the performance capabilities of small and medium-sized construction firms in Nigeria, it is important to introduce the current theory on these firms' characteristics included in this study. The existing theory focuses on the classification, definition, characteristics and performance of these construction firms.

2.1 Classification of construction firms

Contracting organisations are generally classified as small, medium and large firms, on account of a number of criteria that influence the type of works they undertake (Odediran *et al.*, 2012: 259). The criteria that have been adopted in the classification include scope of operation (local, regional, national, and multinational); specialisation (building and engineering); size and category of contracts (small, medium, and large), and the nationality (foreign and indigenous) of the company's owner(s) (Muazu & Bustani, 2004: 13; Idoro & Akande-Subar, 2008; Ihua & Siyanbola, 2012: 173).

Firms differ in their levels of capitalisation, sales and employment; hence, definitions that employ measures of size (number of employees, turnover, profitability, net worth, and so on), when applied to one sector, could lead to all firms being classified as small, while the same size definition, when applied to a different sector, could lead to a different result (Kayanula & Quarterly, 2000: 5). Ayyagari, Beck & Demirguc-Kunt (2003: 3) contend that the definitions of small and medium-scale enterprises vary according to contexts, authors and countries, which are defined by differences in capital requirements and levels of industrial development. In countries such as Japan, Peru and Canada, small-scale business is defined in terms of annual turnover and the number of paid employees (Ayyagari *et al.*, 2003: 4, 8).

Shakantu, Kajimo-Shakantu, Saidi & Mainga (2006) and Chilipunde (2007) observe that a small and medium contracting firm is a typical sole proprietorship firm, or in many cases, a family-owned business with few foremen who are mostly casual labour. Kozak (2007) and Idoro & Akande-Subar (2008) define small and medium-sized construction firms as companies with metric (usually number of employees or annual turnover) that fall below certain thresholds. Basil (2005: 44) observes that, while the number of employees and rate of turnover are good indicators, the number of employees and the total amount of turnover for defining small and medium-scale firms in different countries are certainly not similar.

The Nigerian National Policy on Micro, Small and Medium Enterprises (NPMSMEs) (2007) considered the classication of firms on the basis of size, sector, organisation, technology, location, employment, turnover, assets, and paid-up capital, with the view to understanding the nature, characteristics, performance, problems and challenges of business enterprises and for the purpose of a coherent national policy in Nigeria. In view of this, the NPMSMEs (2007) adopted classifications and definitions based on the criteria of employment and assets (excluding land and buildings), as shown in Table 1.

Table 1: Classification of small and medium-scale firms

S/N	*Size category*	*Employment*	*Assets (N million) (excluding land and buildings)*
1	Micro enterprises	Less than 10	Less than 5
2	Small enterprises	10-49	5 less than 50
3	Medium enterprises	50-199	50 less than 500

Source: SMEDAN, 2009

The NPMSMEs (2007) proposes that, where there is a conflict in classification between the criteria of employment and assets, the employment-based classification will take precedence and the enterprise will be regarded as micro/small. There is no definite agreement in existing literature on the definition of small and medium-scale firms (Ayyagari *et al.,* 2003: 3). In view of this, the Small and Medium Enterprises Development Agency of Nigeria's (SMEDAN) (2009) definition of a small firm as an enterprise whose total assets, including working capital but excluding the cost of land, is between N5 million and N50 million with a workforce of between 10 to 49 full-time staff, and an annual turnover of not more than N10 million, may be considered very worthwhile. SMEDAN (2009) defines a medium-scale enterprise as a company with a total asset, including working capital but excluding the cost of land and building, of over N50 million, but less than N500 million. Moreover, the medium-sized firm has a staff strength of between 50 to 199 full-time workers, with an annual turnover of not more than N20 million. In this article, the definitions and classifications of small and medium-sized firms, as set out by SMEDAN (2009), are adopted as the operational definitions.

2.2 Characteristics versus project performance of construction firms

According to Olokoyo (1999: 54), small and medium-sized firms are characterised by the company structure, the company registration grade, the number of skilled and unskilled labour, the number of full-time employees, the average annual turnover, collected company worth, year of establishment, year of incorporation, coverage of operation, area of specialisation, sources of project finance, sources of equipment, major client of the firms, tendering procedure for securing contracts, and procurement method adopted by these firms. Time, cost, quality and satisfaction have been identified as the main criteria for measuring the overall success of any construction project (Dissanayaka & Kumaraswamy, 1999; Aliyu *et al.,* 2015: 11). Cost and

time are the most popular measures because of their quantitative characteristics and direct economic implications if their thresholds are unnecessarily exceeded (Ogunsemi & Jagboro, 2006: 253). The understanding of the cost and time performances of projects executed by small and medium-sized firms could enable one to draw inferences on how the size of construction firms defines their performance. Unfortunately, there is limited empirical evidence that has isolated the performances of this category of construction firms.

Most of the literature identified the characteristics of small and medium-sized construction firms as not suitable to be considered by all categories of clients for projects of higher complexities and profitability, for fear of their abilities to meet the overall success of projects (Wasi, Bridge & Skitmore, 2001; Dlungwana & Rwelamila 2003; Uduak, 2006; Ibrahim, Githae & Stephen, 2014; ILO, 2015; Mitrofanova *et al.*, 2015; Hussain & Abdul Hadi, 2018).

Dlungwana & Rwelamila (2003: 3) identified the key features of small-sized contracting firms as largely unregistered, operation in the informal sector of the economy, hardly any formal business systems, largest percentage of total contractors, and very few permanent staff, usually less than ten employees. Besides, the ownership structure is less complex (Hussain & Abdul Hadi, 2018: 21), and capabilities for innovation are relatively low (Martínez-Román, Tamayo & Gamero, 2017; Wang *et al.*, 2018). The nature of contracts executed by small and medium-sized construction firms includes substantial maintenance works, refurbishment, and housing construction projects, which are carried out under lump-sum contract and through open tender procedure (Wasi *et al*., 2001). Moreover, most small and medium-sized construction firms are characterised by lack of policy for the implementation of new technologies and training, lack of preference on the types of construction work accepted, dominated by a single owner, and manpower shortages (Sweis, Bisharat, Bisharat & Sweis, 2014: 31-33; Kamal & Flanagan, 2014: 7-10).

The International Labour Organisation (ILO) (2015: 19-20) identified the problems facing small and medium-scale construction firms as inadequate finance and inability to get credit from suppliers, inability to employ competent workers, poor pricing, tendering, and contract documentation skills. These also include poor mentoring and fronting for established contractors, lack of entrepreneurial skills, lack of proper training, lack of resources for either large or complex construction work, lack of technical, financial, contractual, and managerial skills, and late payment for work done. Achuenu, Izam & Bustani (2000) identified the characteristics that bedevilled the level

of participation of indigenous contractors as resources constraints, problem of payments for executed work, abuse of mobilisation fund, and government inconsistencies. According to Wasi *et al.* (2001) and Ahadzie (2007), small and medium-sized firms are often characterised by cash-flow problems, financial skills, and lack of the requisite managerial skills to adequately compete.

Ofori (1991) asserts that the global construction industry experiences all kinds of challenges and problems and that there is a perception that the industry is lagging behind in terms of technological advancement, development of operational processes, and keeping up to date with prevailing business trends. Hagstedt & Thideman (2013: 34-38) identified financial, infrastructural, managerial, technological, human resources and safety problems as challenges experienced by small building contractors in Norway. In the South African context, Thwala & Phaladi (2009: 533) showed that small and medium-sized contractors are characterised by poor technical, managerial and entrepreneurial skills, which generally explain the unsatisfactory performance of the projects they execute. The inability to provide securities, raise insurance, and obtain professional indemnity as well as delay or non-payment by government upon the completion of projects are significant factors limiting their engagement in large or complex construction works (Thwala & Mvubu, 2008: 97). In the Ghanaian construction industry, factors such as lack of access to capital, low profit margin due to competition, and delay in collecting payments have contributed to the failure of small and medium building contractors (Odonkor, 2011: 77).

In the Nigerian context, the characteristics that impact on small and medium-size contractor's performance include limited access to credit, high cost of doing business (Ihua & Siyanbola, 2012: 182-183), cash-flow problems, fraudulent practice, and the nature of the working or construction environment (Gambo & Said, 2014: 1057). Moreover, the underperformance of the Nigerian small and medium-sized firms has been explained by under-capitalisation, high cost of construction finance (Ugochukwu & Onyekwena, 2014: 12), poor management practice, poor accounting standards, shortage of manpower (Onugu, 2005: 15), lack of capital equipment, and shortage of skilled labour (Mafimidiwo & Iyagba, 2015: 105).

Table 2 summarises the major characteristics or challenges influencing the performance of projects executed by small and medium-sized construction firms.

Table 2: Performance characteristics of small and medium-sized construction firms

Characteristic	*Challenges*	*Sources*
Company	Lack of formal registration	Dlungwana & Rwelamila, 2003
	Single or less complex ownership structure	Sweis *et al.,* 2014; Kamal & Flanagan, 2014; Hussain & Abdul Hadi, 2018
Equipment	Relatively low capabilities for innovation	Martínez-Román *et al.*, 2017; Wang *et al.,* 2018
	Lack of policy for implementation of new technologies and training	Sweis *et al.,* 2014; Kamal & Flanagan, 2014
	Resources constraints	Achuenu *et al.,* 2000; Hagstedt & Thideman, 2013
	Poor technology, business trends awareness	Ofori, 1991
Finance	Limited access to credit and credit facilities	Ihua & Siyanbola, 2012; ILO, 2015
	Under-capitalisation, lack of access to capital, low financial and capital base	Ahadzie, 2007; Odonkor, 2011; Hagstedt & Thideman, 2013; Ugochukwu & Onyekwena, 2014; Mafimidiwo & Iyagba, 2015
	Inadequate finance and cash-flow problems	ILO, 1978; Wasi *et al.,* 2001; Gambo & Said, 2014; ILO, 2015
	High cost of construction finance, high cost of doing business in the construction environment	Ihua & Siyanbola, 2012; Gambo & Said, 2014; Ugochukwu & Onyekwena, 2014
	Poor accounting and financial skills	Wasi *et al.,* 2001; Omisore & Abiodun, 2014
	Inability to provide securities, raise insurance, and obtain professional indemnity	Thwala & Mvubu, 2008
	Late payment from client, delay in collecting payments, problem of payments for executed work, low profit margin due to competition, abuse of mobilisation fund, fraudulent practice	ILO, 1978; Achuenu *et al.,* 2000; Ahadzie, 2007; Odonkor, 2011; Hagstedt & Thideman, 2013; Gambo & Said, 2014
Staff and labour	Manpower shortages and shortage of skills labour, very few permanent staff	Dlungwana & Rwelamila, 2003; Omisore & Abiodun, 2014; Kamal & Flanagan, 2014; Sweis *et al.,* 2014; Mafimidiwo & Iyagba, 2015
	Lack of technical, managerial and entrepreneurial skills and poor management practice	Thwala & Mvubu, 2008; Ahadzie, 2007; Hagstedt & Thideman, 2013; Omisore & Abiodun, 2014
	Lack of capacity to employ competent workers, poor mentoring and fronting for established contractors, lack of proper training, lack of skill for complex construction work	ILO, 1978; 2015

Characteristic	*Challenges*	*Sources*
Operation and specialisation	Operate in the informal sector	Dlungwana & Rwelamila, 2003
	Substantial maintenance works	Sweis *et al.,* 2014
	Lack of preference on types of construction work accepted	Kamal & Flanagan, 2014
Clients	Delay or non-payment by government after completing projects	Thwala & Mvubu, 2008
Tender and procurement	Open tendering procedure and lump-sum contract	Wasi *et al.,* 2001
	Poor pricing, tendering and contract documentation skills	ILO, 2015

3. Methodology

This study describes the respondents' opinion on how the characteristics of small and medium-sized firms define the types, as well as the time and cost performance of the projects they execute. A quantitative research design was used, in which the use of structured questionnaire surveys enables researchers to generalise their findings from a sample population (Van Laerhoven, Van der Zaag-Loonen & Derkx, 2004; Bryman & Bell, 2007; Bryman, 2012: 232; Creswell, 2014), usually by gathering numeric data in a systematic format (Quinlan, 2011). It also allows for descriptive analysis where frequencies and percentages systematically describe the characteristics of a population (Bhattacharyya & Johnson, 2014; Kowalczyk, 2015). Together with the results from the questionnaire survey, archival data on time and cost performances of 184 public projects were considered and form the data sets for this study.

3.1 Sampling method and response rate

The target population comprised the ninety-two (92) small and medium-sized construction firms that were registered with, and that had executed projects for the Oyo State Government through the Bureau of Public Procurement. Oyo state is located in southwestern Nigeria and has sizeable volumes of construction activities and head offices of construction and consulting firms. The study adopted a total enumeration method of the firms. Considering the relatively small size of the population that means a complete selection of all items in a population under study (Kothari, 2004: 55). According to Leedy & Ormrod (2010: 216), total enumeration sampling is appropriate where the population size is less than 100, and a desired level of accuracy is required (Babbie & Mouton, 2001). In this regard, the sample size for this study consisted of 92 small and medium-sized

construction firms. Sixty-eight (68) valid questionnaire responses, representing a response rate of 73.91%, were returned (see Table 3). Fifty (73.0%) of these were obtained from small firms. This was higher than eighteen (26.0%) responses obtained from medium-sized firms. The response rate is considered adequate, as asserted by Idrus & Newman (2002: 15), in that the response rate of 30.0% is appropriate for construction management studies.

3.2 Data collection

A self-administered structured questionnaire survey was distributed among the 92 top managers including business administrators, accountants, architects, quantity surveyors, builders, project managers, and engineers, with at least one respondent selected from each building construction firm located in Oyo State, Nigeria, from June 2016 to October 2016.

The questionnaire was developed based on the constructs of the literature review. It was divided into two parts. Part 1 used fill-in and check-boxes questions to gather the respondents' profile. These include the respondents' academic and professional qualifications and years of working experience in the construction industry, in general. Part 2 of the questionnaire consisted of 25 questions relating to the specific objectives of the study. This was further divided into two sections. Using check-boxes and fill-in questions, section 1 consisted of 18 questions on the characteristics of the sampled firms, including the company structure, number of skilled and unskilled labour, average annual turnovers, year of establishment, coverage of operation, sources of project finance, and sources of equipment. In section 2, respondents answered 7 fill-in and check-boxes questions on the profile of the projects executed by the firms. These comprised variables such as project description, location of projects, type of clients, value of contracts, and completion duration, among others. The survey questionnaire was designed as a close-ended type. According to Kothari (2004: 18), close-ended questionnaires are easy to handle, simple to answer, and relatively quick to analyse. The respondents were informed about the purpose of this study and their freedom to be anonymous.

To draw inferences on the possible relationship of construction firm's size and project performance, time and cost performances on the initial and final contract sums as well as initial and completion schedules of 184 public projects executed by the firms were examined.

3.3 Analysis and interpretation of the data

The Statistical Package for Social Sciences (SPSS) version 22 (Pallant, 2013 was used to calculate the mean of responses and to analyse them using descriptive statistics such as frequencies and percentages (Bhattacharyya & Johnson, 2014). The frequencies and percentages of responses were generated and reported, in order to analyse and describe the profile of the respondents, the characteristics of their firms as well as the profile of the projects executed by these firms (Naoum, 2007: 103).

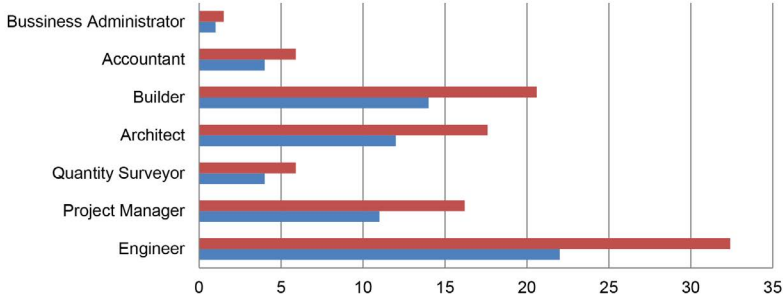
In determining the time and cost performance of projects executed by the firms, archival data on past projects were collected on 155 public projects executed by small construction firms and 29 public projects executed by medium-sized construction firms in the study area. Archival data relating to initial and final costs of past projects were collected and from these pairs of data sets, cost overruns were determined and project cost performance calculated, using the cost performance index (CPI) (Jackson & Steven, 2001). CPI is the ratio that measures the financial effectiveness of a project by dividing the budgeted cost and the actual cost, such that CPI > 1 is excellent performance over budget; CPI < 1 is underperformance over budget, and CPI = 1 means desired cost performance over budget (Zhu & Lin, 2004). Archival data relating to completion schedules of past projects were collected and the initial and final durations of the projects were obtained. From this pair of data sets, time overruns were determined (Zhu & Lin, 2004; Park, 2009) and project time performance calculated, using the schedule performance index (SPI) adapted from Kuprenas (2003). Kuprenas (2003) defines SPI as SPI = BCWP/BCWS, where BCWP = budgeted cost of the work performed, and BCWS = budgeted cost of the work scheduled. SPI value of 1 (SPI =1) means the time was as planned (at the time value), SPI value above 1 (SPI > 1) means the project was ahead of schedule, and SPI of less than 1 (SPI < 1) means the project was behind schedule.

4. Results and discussion

4.1 Profile of the respondents

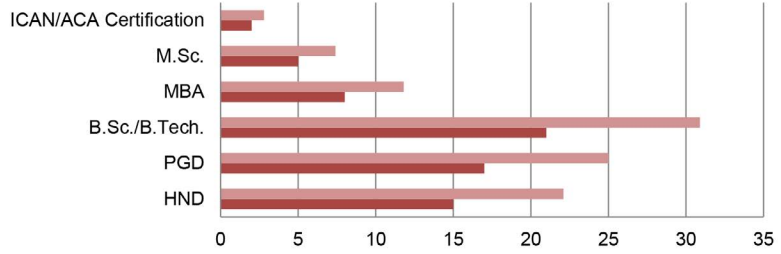
Figure 1 presents the respondents' profiles. The distribution of the respondents showed that engineers involved in the study represented 32.0% of the sample, while 16.0% were project managers, 5.9% quantity surveyors, and 17.6% architects. Each of the builders, accountants, and business administrators involved represented 20.5%, 5.9% and 1.5%, respectively. These results show that the respondents covered

construction management professionals that could provide adequate information on various types of projects executed by the firms in the study area. The analysis of the respondetns' working experience showed that 35.3% had 6-10 years' working experience, 26.5% had 11-15 years' working experience, and 36.7% had 16-20 years' working experience. Only 1.5% had less than 5 years' working experience. Moreover, the average years of experience of the respondents was estimated at 13 years, which represents the working experience of approximately 63.2% of the respondents.



	Engineer	Project Manager	Quantity Surveyor	Architect	Builder	Accountant	Bussiness Administrator
Percentage	32.4	16.2	5.9	17.6	20.6	5.9	1.5
Frequency	22	11	4	12	14	4	1

Figure 1: Type of respondents



	HND	PGD	B.Sc./B.Tech.	MBA	M.Sc.	ICAN/ACA Certification
%	22.1	25	30.9	11.8	7.4	2.8
Frequency	15	17	21	8	5	2

HND =Higher national diploma; PGD = Postgraduate diploma; B.Sc. = Bachelor of Science; B.Tech. = Bachelor of Technology; M.Sc. = Master of Science; MBA = Master of Business Administration.

Figure 2: Academic qualification of respondents

Figure 2 presents the educational qualifications of the respondents. The results show that the respondents with a Master of Science (M.Sc.) degree and a Master of Business Administration (MBA) were represented at 7.4% and 11.8% of the sample, respectively. The highest number of respondents were those with a Bachelor of Science/Technology degree (B.Sc./B.Tech.), representing 30.9%. Moreover, 22.1% obtained a Higher National Diploma (HND) and 25% held a Postgraduate Diploma (PGD).

Table 3 presents the analysis of the respondents' official designations. Respondents who held the post of deputy director and manager were equally represented at 14.7%. Approximately 42.6% of the respondents held the post of director, while 10.3%, 5.9%, 4.4% and 2.9% held the position of general managers, site engineers, project managers and site supervisors, respectively. Moreover, each of the resident architects, technical officers, and principal consultants involved represented 1.5% of the sample. These outstanding profiles of the respondents (Figures 1 and 2; Table 3) were considered in assessing the appropriateness of data for this study.

Table 3: Official designation of the respondents

Designation	*Small firm*		*Medium firm*		*Total*	
	F	*%*	*F*	*%*	*F*	*%*
Director	20	40	9	50.0	29	42.6
Deputy director	9	18	1	5.6	10	14.7
Manager	6	12	4	22.2	10	14.7
General manager	5	10	2	11.1	7	10.3
Site engineer	3	6	1	5.6	4	5.9
Project manager	3	6	0	0	3	4.4
Site supervisor	1	2	1	5.6	2	2.9
Resident architect	1	2	0	0	1	1.5
Technical officer	1	2	0	0	1	1.5
Principal consultant	1	2	0	0	1	1.5
Total	50	100	18	100	68	100

F = Frequency

4.2 Characteristics of small and medium-sized construction firms

Data collected for the examination of the characteristics of the small and medium-sized firms include the company structure, the number of skilled and unskilled labour, average annual turnover, year of establishment, coverage of operation, sources of project finance, and sources of equipment. Data were also collected on year of incorporation, company worth, area of specialisation, number of full-time employees, major clients of the firms, company registration grade, tendering procedure for securing contracts, and procurement method adopted by the firms. The results of the analysis presented in Table 4 show that 40.0% of the small firms were sole proprietorship, followed by partnership (32.0%), and those owned as Limited Liability Company (28.0%). In the medium-sized firm category, Limited Liability Company had the highest percentage of ownership structure (55.6%), followed by partnership (33%), and sole proprietorship (11.1%). These results infer that a larger percentage of the small firms in the study area is owned mainly as sole proprietorship, while medium-sized firms are owned mainly as Limited Liability Company. These findings corroborate Chilipunde's (2007: 1) definition of small and medium-sized contracting firms as a typical sole proprietorship firm in the small category as against the medium-sized result with the highest percentage of Limited Liability Company structure. The analysis further shows the percentage and average number of skilled and unskilled employees employed by the firms. On average, the number of skilled employees was estimated at 11 and 30 for small and medium-sized firms, respectively. On the other hand, the average number of unskilled employees was estimated at 17 and 40 for small and medium-sized firms, respectively. Moreover, the percentage distribution of the annual turnover of the firms shows that 42.0% of the small firms had an annual turnover of N1-N10 million, followed by 54.0% with an annual turnover of N11-N50 million.

The percentage of small firms with an annual turnover of N51-N100 million and N101-N500 million was 2.0% each. The average annual turnover for small firms was estimated at N26 million, while the turnover for medium-sized firms was estimated at N31 million. The results show that both small and medium-sized firms fell on the same range of N11-N50 million in annual turnover. These results contradict SMEDAN's (2009) classification of small and medium-scale firms in terms of annual turnover. SMEDAN (2009) asserted that the annual turnover for small and medium enterprises is N10 million and N20 million, respectively. The analysis also shows the years of establishment of the firms. These were estimated at 15 and 20 years

for small and medium-sized firms, respectively. This result implies that most of the firms have been operating for over a decade, and a satisfactory level of experience in the construction industry could be inferred. The result of the analysis also shows the operations coverage of the firms. Specifically, 44.0% of the small firms operate within the states in which they are located, 28.0% have their operations' coverage within their geopolitical zone (southwest), and 28.0% operate at national level (covering the six geopolitical zones in Nigeria). Meanwhile, 55.6% of the medium-sized firms operate within the states in which their head offices are located, 33.3% within the southwestern geopolitical zone, and 11.1% within all the states of the Federation in the medium-sized category. The fact that a greater percentage of the small and medium-sized firms operate within their states is true, because it could take time to build trust and confidence in a developing firm. The result of the analysis in Table 4 further shows the sources of project funding by the firms. Bank loans have the highest percentage of 82.0%, followed by equity (10.0%), and clients (8.0%), in the small firms.

Table 4: Characteristics of small and medium-sized construction firms

Characteristics	*Parameters*	*Small firms N=50*		*Medium firms N=18*		*Total N=68*	
		F	*%*	*F*	*%*	*F*	*%*
Company categorisation	Sole proprietorship	20	40	2	11.1	22	32.4
	Limited liability company	14	28	10	55.6	24	35.2
	Partnership	16	32	6	33.3	22	32.4
Years of establishment	1-10	16	32	1	5.6	17	25.0
	11-20	24	48	9	50.0	33	48.5
	21-30	7	14	7	38.8	14	20.6
	31-40	1	2	1	5.6	2	2.9
	Above 40	2	4	0	0	2	2.9
Years of incorporation	1-10	17	34	2	11.1	19	27.9
	11-20	22	44	9	50.0	31	45.6
	21-30	8	16	6	33.3	14	20.6
	31-40	2	4	1	5.6	3	4.4
	Above 40	1	2	0	0	1	1.4
Coverage of operation	Within the State	22	44	10	55.6	32	47.1
	Within the geopolitical zone	14	28	6	33.3	20	29.4
	National	14	28	2	11.1	16	23.5

Table 4: Continued

Characteristics	*Parameters*	*Small firms N=50*		*Medium firms N=18*		*Total N=68*	
		F	*%*	*F*	*%*	*F*	*%*
Source of project finance	Bank Loan	41	82	13	72.2	54	79.4
	Equity	5	10	3	16.7	8	11.8
	Client	4	8	2	11.1	6	8.8
Source of equipment	In-house	30	60	15	83.3	45	66.2
	Lease	20	40	3	16.7	23	33.8
Company assets (N)	1-50	18	36	0	0	18	26.5
	51-100	1	2	0	0	1	1.5
	101-500	27	54	15	83.3	42	61.8
	Above 500	4	8	3	16.7	7	10.3
Number of skilled employees	1-10	27	54	0	0	27	39.7
	11-20	18	36	4	22.2	22	32.4
	21-30	4	8	6	33.3	10	14.7
	31-40	1	2	4	22.2	5	7.4
	41-50	0	0	2	11.1	2	2.9
	Above 50	0	0	2	11.1	2	2.9
Number of unskilled employees	1-10	14	28	0	0	14	20.6
	11-20	21	42	1	5.6	22	32.4
	21-30	9	18	2	11.1	11	16.2
	31-40	5	10	4	22.2	9	13.2
	41-50	1	2	7	38.9	8	11.8
	Above 50	0	0	4	22.2	4	5.8
Average annual turnover (N)	< 10	21	42	0	0	21	30.8
	11-50M	27	54	18	100	45	66.2
	51-100M	1	2	0	0	1	1.5
	101-500M	1	2	0	0	1	1.5
Project category	New	40	25.8	18	62.1	58	31.5
	Renovation	115	74.2	11	37.9	126	68.5
Company registration grade	Grade A	12	24	0	0	12	17.6
	Grade B	21	42	0	0	21	30.9
	Grade C	17	34	0	0	17	25.0
	Grade D	0	0	18	100	18	26.5
Major clients	Government	49	98.0	18	100	67	98.5
	Private	1	2.0	0	0	1	1.5
Method of procurement	Traditional lump sum	39	78	16	88.9	55	80.9
	Design and build	2	4	0	0	2	2.9
	Management contracting	9	18	2	11.1	11	16.2

Table 4: Continued

Characteristics	*Parameters*	*Small firms N=50*		*Medium firms N=18*		*Total N=68*	
		F	*%*	*F*	*%*	*F*	*%*
Tendering procedure adopted	Open tendering	31	62.0	12	66.7	43	63.2
	Selective tendering	15	30.0	5	27.8	20	29.4
	Negotiation tendering	4	8.0	1	5. 5	5	7.4
Full-time employee available	1-10	26	52	1	5.6	27	39.7
	11-20	18	36	1	5.6	19	27.9
	21-30	5	10	1	5.6	6	8.8
	31-40	1	2	6	33.3	7	10.3
	41-50	0	0	4	22.2	4	5.9
	Above 50	0	0	5	27.7	5	7.4

F = Frequency = F

In the medium-sized category of firms, 72.2% of the firms funded their projects through bank loans, 16.7% through equity, and 11.1% from clients. The results show that most of the projects executed by both small and medium-sized firms are funded through bank loans. This shows that accessibility to loan facilities is a key factor for enhancing the performance and delivery capacity of these firms. It is, therefore, imperative to address the issue of access to finance with reduced interest rate, in order to enhance the firms' capacities.

Furthermore, the results show that 60.0% of the equipment stocks of the small firms are held in-house, and 40.0% are through lease. On the other hand, 83.3% of the medium-sized firms source their equipment in-house, while 16.7% are through lease. The results show that both small and medium-sized firms have the stock of in-house equipment that is fairly adequate for the type of projects they execute. This means that they could handle more complex construction projects to a satisfactory level of performance, as asserted by Ibrahim *et al*. (2014). Nonetheless, the firms' equipment capacity must be improved, because construction activities are becoming complicated, complex and advanced, due to new innovations and technology (Wang *et al.*, 2018). The average years of incorporation of the firms are estimated at 15 years and 19 years for small and medium-sized firms, respectively. This implies that most of the firms have been incorporated for over a decade and have satisfactory experience in the construction industry. The analysis further shows the firms' asset base. In the small firm category, 36.0% have company worth ranging between N1 and N50 million. Approximately 2.0%

have N51-N100 million, 54.0% have N101-N500 million, and 4.0% have above N500 million. Meanwhile, N101-N500 million range has the highest percentage of 83.3%, and 16.7% have above N500 million company worth in the medium-sized category. On average, the company worth of small and medium-sized firms is estimated at N213 million and N334 million, respectively. These findings contradict SMEDAN's (2009) classification of small and medium-scale firms in terms of total asset/company worth for small-sized firms, but are in conformity with medium-sized firms. SMEDAN's (2009) classification of small and medium-scale firms, in terms of total asset/company worth for small and medium-sized firms, indicates N50 million and N500 million, respectively.

4.3 Projects executed by small and medium-sized construction firms

In order to understand the profile of the projects executed by the firms, results of variables including contract or project descriptions, location of projects, type of clients, values of contracts, completion duration, and project types are evaluated and shown in Table 5.

Table 5: Projects executed by small and medium-sized construction firms

Characteristics	*Parameters*	*Small firms N=50*		*Medium firms N=18*		*Total N=68*	
		F	*%*	*F*		*F*	
Contract type	Civil work	5	10	8	44.4	13	19.1
	General building work	37	74	7	38.9	44	64.7
	Civil and general building work	8	16	3	16.7	11	16.2
Project type	Educational	139	89.7	3	10.4	142	77.1
	Residential	4	2.6	0	0	4	2.2
	Road works	3	1.9	12	41.4	15	8.2
	Health/Hospital	0	0	5	17.2	5	2.7
	Commercial	3	1.9	9	31.0	12	6.5
	Drainage works	6	3.9	0	0	6	3.3
Location of project	Ibadan	88	56.8	20	69	108	58.7
	Ogbomosho	19	12.3	4	13.8	23	12.5
	Oyo	11	7.1	0	0	11	6.0
	Others	37	23.8	5	17.2	42	22.8
Type of client	State Government	154	99.4	29	100	183	99.5
	Private	1	0.6	0	0	1	0.5

Characteristics	*Parameters*	*Small firms N=50*		*Medium firms N=18*		*Total N=68*	
		F	*%*	*F*		*F*	
Value of contract (N)	< 1M	5	3.2	0	0	5	2.7
	1M-10M	117	75.5	0	0	117	63.6
	11M-50M	33	21.3	0	0	33	17.9
	51M-100M	0	0	29	100	29	100
Completion duration (weeks)	1-26	31	20.0	1	3.5	32	17.4
	26-52	121	20.0	19	65.5	122	17.4
	52-144	3	1.90	9	31.0	22	76.1

F = Frequency = F

Educational infrastructure was the highest type of projects executed by the firms, with a percentage of 89.7%, followed by residential projects (2.6%), road works and commercial projects (1.9% each), and drainage works (3.9%) for the small firms. In the medium-sized firms, road works had the highest percentage of 41.4%, followed by commercial projects (31%), health/hospital projects (17.2%), and educational projects (10.4%). These results show that educational projects are the type of projects mostly executed by small firms, while road works, presumably substantial maintenance (Wasi *et al.*, 2001), is the public project mostly executed by medium-sized firms. The results of the analysis also show that 3.2% of the projects involving small firms have contract values below N1 million. Approximately 75.5% of the projects' contract values ranged between N1 million and N10 million, and 21.3% of the projects had contract values ranging between N11 million and N50 million. Approximately all (100%) of the projects involving medium-sized firms have contract values ranging between N51 million and N100 million. These results show that most of the projects executed by small firms ranged between N1 million and N50 million, while those executed by medium-sized firms ranged between N51 million and N100 million.

In addition, an evaluation of the duration of the projects executed by the firms shows that 20.0% of the projects by small firms have contract periods of between 1 and 26 weeks, while contracts lasting between 26 and 52 weeks and between 52 and 144 weeks are 78.1% and 1.9%, respectively. For the medium-sized firms, 3.5% of the projects have contract periods ranging between 1 and 26 weeks (65.5%) and 31.0% have contract periods ranging between 26 and 52 weeks and 52 and 144 weeks, respectively. The shortest contract duration for both categories of firms fell below 26 weeks, while the longest contract duration fell below 78 weeks. The results show that projects executed by small firms are substantially renovation

or rehabilitation works. On the other hand, 62.1% of the projects executed by medium-sized firms are new projects, while renovation works are 37.9%. These findings support Wasi *et al*. (2001) who assert that the nature of contracts executed by small and medium-sized construction firms includes maintenance works, refurbishment, and housing construction projects, carried out under lump-sum contract through open tendering procedure.

An assessment of the area of specialisation of the firms shows that they are mainly civil works, general building works, and civil/general building works. The percentage of firms that specialise in civil works, general building works, and civil/general building works are 10.0%, 74.0%, and 16.0%, respectively in the small firm category. Moreover, 44.4% specialised in civil works, 38.9% in general building works, and 16.7% in civil/general building works in the medium-sized firm category. These results show that most of the small and medium-sized firms are engaged in general building works more than in other areas of construction works, presumably because the equipment owned by the firms are related to building works. The results of the analysis also show the number of full-time employees which is estimated at 12 and 38 for the small and medium-sized firms, respectively. These results conform with SMEDAN's (2009) classification of small and medium-scale firms in terms of staff strength and number of employees. However, firms in the medium-sized category may have to improve on their staff strength, in order to meet job requirements and demands.

The results of the firms' clients show that 98.0% of the small firms have public sector organisations as their major clients and 2.0% of private organisations. Approximately all the firms (100.0%) in the medium-sized category have public sector organisations as their major clients, although some indicated that they had been engaged by corporate and private organisations. These findings show that the clients of the two categories of firms have substantially been public organisations. The evaluation of tendering procedure adopted in engaging the firms shows that most of the firms (62%) are engaged using open tendering. Approximately 30.0% are engaged through selective tendering, and 8.0% through negotiated tendering in the small firm category. The analysis further shows that 66.7% are engaged through open tendering, and that 27.7% and 5.6% are engaged through selective and negotiated tendering, respectively, in the medium-sized firm category. These results could be attributed to the fact that government often adopts open tendering or competitive bidding for most of the public projects. The procurement systems adopted in projects where small and medium-sized firms are involved were

also examined. Traditional lump-sum contract has the highest percentage of 78.0%, management contracting 18.0%, and the least was 'design and build' procurement system with 4.0% in the small firm category. Moreover, 88.9% of the medium-sized firms are involved in projects procured through traditional lump-sum procurement and the least was management contracting with 11.1%. The result shows that small and medium-sized firms are involved in projects procured through both traditional and non-traditional procurement systems and that their involvement is extremely low in the non-traditional procurement system. The fact that the firms are engaged through the traditional method using lump-sum contracts suggests in part that clients perceive the firms as inexperienced in the management of non-traditional methods. The results also suggest that, if small and medium-sized firms are to remain relevant and attract more patronage and compete globally, they need to improve their skills more on the non-traditional procurement systems, as project complexity and clients' requirements are geared towards innovative procurement systems (Babatunde, Opawole & Ujaddughe, 2010: 1).

4.4 Cost performance of projects executed by small and medium-sized firms

Cost overruns of the projects were determined and calculated as the difference between final contract sum and initial contract sum. Table 6 shows the results of cost overruns and project cost performance as calculated by the CPI.

Table 6: Cost performance of projects executed by small and medium-sized firms

Variable	*Parameter*	*Small firms N=155*		*Medium firms N=29*		*Total N=184*	
		F	*%*	*F*	*%*	*F*	*%*
Degree of cost overrun	0%	150	96.8	9	31.0	159	86.4
	1 to 10%	0	0	20	69.0	20	10.9
	10 to 20%	2	1.3	0	0	2	1.1
	-10 to -20%	1	0.6	0	0	1	0.5
	> -20%	2	1.3	0	0	2	1.1
Total		155	100.00	29	100.00	184	100.00
Cost performance level	CPI > 1	3	1.94	0	0	3	1.63
	CPI = 1	149	96.12	9	31.03	158	85.87
	CPI < 1	3	1.94	20	68.97	23	12.50
Total		155	100.00	29	100.00	184	100.00

Approximately 1.94% of the projects executed by small firms have a CPI estimated at CPI > 1. Meanwhile, 96.12% have CPI = 1 and 1.94% have CPI > 1. On average, the CPI of projects executed by small firms is estimated at approximately 1.00 (CPI =1). This implies that the projects executed by small firms achieved the desired cost performance level, as contended by Uduak (2006: 2) and Ibrahim *et al*. (2014). Moreover, most of the projects executed by small firms do not have appreciable cost overrun, presumably because the projects were procured at a fixed contract price. Furthermore, approximately 31.03% of the projects executed by medium-sized firms have a CPI of 1, while 68.97% have CPI < 1 and none of the projects were completed at a cost lower than budget (CPI > 1). On average, the CPI of projects executed by medium-sized firms is estimated to be 0.95, which implies that the projects executed by these firms fell within the cost underperformance level (CPI < 1).

The results show that cost underperformance/overrun is more prevalent in the projects executed by medium-sized than by small firms, as only 31.03% of the projects by the medium-sized firms could achieve completion within the budgeted cost, while 68.970% experienced cost overrun at a range of 1%-10% of the estimated costs. However, a number of inferences could be made from these results. The final costs (mostly in the small firm category) suggest that most of the projects were awarded on fixed price contracts, as little deviation from the initial costs only exists in the values, because, ordinarily, it is difficult to have CPI = 1. There is also a high tendency that the contractors were paid huge mobilisation fees. Besides, there is an indication of 'foul play' in the documentation of the final sums of the projects by the contractors to reflect cost overrun occurrence as less prevalent in the projects executed. This could be attributed to the fact that most of the projects are traditional lump sum in nature and government most often agrees on a fixed price with the consultants and contractors. Moreover, the contractors are to work within these cost limits, because fluctuation claims are not often entertained as they are made to bear the burden of any extra cost on the projects. However, the most interesting inference could be a deliberate 'figure fixing' that portends a good performance of the projects, in order to guarantee the contractors' future engagements and remain in business.

4.5 Time performance of projects executed by small and medium-sized construction firms

Time overruns of the projects were determined and calculated as the difference between final contract duration and initial contract duration. Table 7 shows the results on time overruns and project time performance as calculated by the SPI.

Table 7: Assessment of time performance of projects executed by small and medium-sized firms

Variable	*Parameter*	*Small firms N=155*		*Medium firms N=29*		*Total N=184*	
		F	*%*	*F*	*%*	*F*	*%*
Degree of time overrun	0%	59	38.10	7	24.10	66	35.9
	1 to 10%	7	4.50	0	0	7	3.80
	10 to 20%	3	1.90	2	6.80	5	2.70
	> 20%	19	12.30	18	62.10	37	20.10
	-1 to -10%	16	10.30	0	0	16	8.70
	-10 to -20%	17	11.00	1	3.50	18	9.80
	> -20%	34	21.90	1	3.50	35	19.00
Total		155	100.00	29	100.00	184	100.00
Time performance level	SPI > 1	3	1.94	0	0	3	1.63
	SPI = 1	149	96.12	9	31.03	158	85.87
	SPI < 1	3	1.94	20	68.97	23	12.50
Total		155	100.00	29	100.00	184	100.00

Approximately 18.71% of the projects executed by small firms have SPI > 1, 37.4% have SPI = 1, while 43.9% have SPI < 1. These results show that approximately 18.7% of the projects were completed ahead of the planned schedule, 38.1% were completed to schedule, and 43.2% had time overrun. On average, the SPI of projects executed by small firms is estimated at 0.95 (SPI < 1), which implies that the time performance of projects executed by small firms is underperformed (although at some satisfactory level). The analysis further shows that 4.5% have a range of 1%-10% time overrun, 1.9% have between 10-20% overrun, and 12.3% have above 20% overrun. Meanwhile, 38.1% of the projects were completed on time and 10.3% have between 1%-10% early completions, 11.0% have between 10%-20% early completion, and 21.9% have greater than 20% early completion. The satisfactory time performance of these projects

suggests that a good number of the firms are fast developing financial and technical capabilities to undertake projects of a more complex nature. However, less satisfactory time performance in some of the projects could be attributed to delayed payment by the government and financial incapability of the contractors to fund their projects (Odonkor, 2011: 77). The reason for this is that many of them depend solely on funds paid by the clients (through mobilisation fees and interim certificates) and that they could possibly not have access to bank loans or alternative sources to fund the projects.

Table 7 also shows the time performance of projects executed by medium-sized construction firms. Approximately 68.97% of the projects executed by medium-sized firms have SPI > 1, 24.13% have SPI = 1, while only 6.91% of the projects executed have SPI < 1. Although the average time performance estimated at 1.24 (SPI > 1) was satisfactory, the results of the analysis, nonetheless, show that approximately 6.91% of the projects are still at underperformance level.

5. Conclusion

This article examined the characteristics of small and medium-sized construction firms and how their profiles define the type, as well as the time and cost performances of the projects they executed. The findings obtained enabled recommendations to be indicated for improving the firms' capabilities towards better performance. The findings established that 40.0% of the small construction firms are owned as sole proprietorship and that 55.6% of the medium-sized firms are owned as Limited Liability Company. The value of projects executed by the small construction firms ranged between N1 million and N50 million, while those of medium-sized construction firms ranged between N51 million and N100 million. The shortest contract duration for both firms fell below 26 weeks, while the longest contract duration fell below 78 weeks. It was also established that 74.2% of the projects executed by small firms are renovation and maintenance works, while 62.1% of the projects executed by medium-sized firms are new projects. Moreover, 58.7% of the projects executed by both firms were located in the states of their head offices. On average, the company worth of small and medium-sized firms is estimated at N213 million and N334 million, respectively. These findings contradict SMEDAN's (2009) classification of small and medium-scale firms in terms of total asset/company worth for small firms, but were in conformity with medium-sized firms. The results showed that projects executed by small firms were substantially renovation or rehabilitation works. On the other hand, 62.1% of the projects

executed by medium-sized firms were new projects, while renovation works accounted for 37.9%. Moreover, the findings showed that the small and medium-sized firms engaged in general building works rather than in other areas of construction works, presumably because the equipment owned by the firms is related to building works and lack of access to finance. Findings further showed that the clients of the two categories of firms had substantially been public organisations. The results showed that small and medium-sized firms are involved in projects procured through both traditional and non-traditional procurement systems and that their involvement is considerably low in the non-traditional procurement system. This fact suggests their inexperience in the management of projects procured through non-traditional methods. It also indicates that, if the firms are to remain relevant and attract more patronage and compete globally, they need to improve on their skill of procurement systems as project complexity and client's requirements are geared towards a procurement system beyond the traditional system (Babatunde *et al.*, 2010). The performance of the projects executed by the firms showed a general underperformance level. Approximately 96.12% and 31.03% of the projects executed by small and medium-sized firms, respectively, have a CPI at budget level (CPI = 1). Meanwhile, 37.42% of the projects executed by small firms and 24.13% of those executed by medium-sized firms were completed as planned, that is, they had SPI = 1. This performance level shows that projects executed by small firms did not have appreciable cost overrun, presumably because they were procured at a fixed contract price. On the other hand, the results of time performance in the case of medium-sized firms showed that only 24.1% were completed as planned, while 69.1% had cost overrun. A major recommendation of the study is the need for proper monitoring of the activities of small and medium-sized construction firms by SMEDAN to ensure their compliance with operations limits in terms of the projects they undertake. Besides, organisational development programmes by the firms should focus on financial and technical capabilities for a better performance of their projects in terms of budget and schedule. Obviously, a limited sample size could restrict the generalisation of these findings. Notwithstanding, the findings provided implications for enhancing the delivery capacity of the firms towards improved performance. Further research on the performance assessment of small and medium-sized construction firms could focus on indicators such as quality, client satisfaction, as well as health and safety.

References

Achuenu, E., Izam, Y.D. & Bustani, S.A. 2000. Investigating the activities of indigenous contractors in Nigerian construction industry. *Nigeria Journal of Construction Technology and Management*, 3(1), pp. 91-103.

Ahadzie, D.K. 2007. A model for predicting the performance of project managers in mass house building projects. Ph.D. Thesis, University of Wolverhampton, UK.

Aliyu, A.A., Haruna, A.A., Ali, A. & Ibrahim M.S. 2015. Influence of building contractors performance on construction process in Nigeria. *Journal of Energy Technologies and Policy,* 5(8), pp. 11-22.

Ariyo, D. 2008. Small firms are the backbone of the Nigerian Economy. *Africa Economic Analysis,* 1(1), pp. 109-124.

Ayyagari, M.T., Beck, T. & Demirguc-Kunt, A. 2003. Small and medium enterprises across the globe: A new database. World Bank, Development Research Group, Washington DC. https://doi.org/10.1596/1813-9450-3127

Babatunde, S.O., Opawole, A. & Ujaddughe, I.C. 2010. An appraisal of project procurement methods in the Nigerian construction industry. *Civil Engineering Dimension,* 12(1), pp. 1-7.

Babbie, E.R. & Mouton, E.B.J. 2001. *The practice of social research.* Cape Town: Oxford University Press.

Basil, A.N. 2005. Small and medium enterprises (SMEs) in Nigeria: Problems and prospects. Ph.D. thesis, St. Clements University.

Bhattacharyya, G.K. & Johnson, R.A. 2014. *Statistics: Principles and methods*. 7th edition. Hoboken, NJ: John Wiley & Sons.

Bryman, A. 2012. *Social research methods*. 4th edition. New York: Oxford University Press.

Bryman, A. & Bell, E. 2007. *Business research methods*. New York: Oxford University Press.

Chilipunde, R.L. 2007. Assessment of emerging contractors in Malawi. Unpublished B.Sc. dissertation. Port Elizabeth: Nelson Mandela Metropolitan University.

Creswell, J.W. 2014. *Research design: Qualitative, quantitative and mixed methods approaches*. 4th edition. Thousand Oaks, CA: Sage.

Dissanayaka, S.M. & Kumaraswamy, M.M. 1999. Comparing contributors to time and cost performance in building projects. *Building and Environment*, 34(1), pp. 31-42. https://doi.org/10.1016/S0360-1323(97)00068-1

Dlungwana, W.S. & Rwelamila, P.D. 2003. Contractor development models for promoting sustainable building: A case for developing management capabilities of contractors. Paper presented at the meeting of CSIR: Pretoria, South Africa, 2003.

Gambo, N. & Said, I. 2014. An assessment of the impact of cost factors influencing performance of small scale local government contractors in Nigeria. *International Journal of Engineering Research and Technology,* 3(11), pp. 1052-1059.

Hagstedt, K. & Thideman, J. 2013. Growth challenges for small general contractors in the construction industry: A case study of the Norwegian building company. M.Sc. thesis, Department of Technology Management and Economics, Chalmers University of Technology.

Hussain, A.M. & Abdul Hadi, R.A. 2018. Corporate governance, small medium enterprises (SMEs) and firms' performance: Evidence from Construction Business, Construction Industry Development Board (CIDB) Malaysia. *International Journal of Business and Management*, 13(2), pp. 14-28. https://doi.org/10.5539/ijbm.v13n2p14

Ibrahim, I.I., Githae, W. & Stephen, D. 2014. Indigenous contractors' involvement and performance in construction procurement systems in Nigeria. *Global Journal of Researches in Engineering,* 14(1), pp. 18-27.

Idoro, G.I. & Akande-Subar, L.O. 2008. Clients' assessment of the quality performance of indigenous and expatriate construction contractors in Nigeria. A paper presented at COBRA: Construction & Building Research Conference of the RICS, 4-5 September, Dublin Institute of Technology, Ireland.

Idrus, A.B. & Newman, J.B. 2002. Construction-related factors influencing the choice of concrete floor systems. *Construction Management Economics,* 20(1), pp. 13-19. https://doi.org/10.1080/01446190110101218

Ihua, U.B. & Siyanbola, T.O. 2012. Critical challenges limiting small business performance in Nigeria. *International Journal of Business in Globalization*, 9(2), pp. 171-185. https://doi.org/10.1504/IJBG.2012.048958

ILO (International Labour Organization). 2015. *Small and medium-sized enterprises and decent and productive employment creation. Report IV*. Geneva, Switzerland: ILO Publications.

Ilori, E.O.I. 2017. A critical analysis of monitoring and evaluation systems for small and medium enterprises, with specific reference to small and medium enterprises development agency of Nigeria. Ph.D. thesis, University of the Western Cape, South Africa.

Jackson, O. & Steven, O. 2001. Management of cost overrun in selected building construction project in Ilorin, *Review of Business and Finance*, *3*(1), pp. 321-332.

Kamal, E.M. & Flanagan, R. 2014. Key characteristics of rural construction SMEs. *Journal of Construction in Developing Countries*, 19(2), pp. 1-13. *https://doi.org/10.5130/ajceb-cs.v2i2.3885*

Kayanula, D. & Quartey, P. 2000. The policy environment for promoting small and medium-sized enterprises in Ghana and Malawi. Finance and development research programme. Working paper series, paper no. 15, IDPM, University of Manchester.

Kothari, C.R. 2004. *Research methodology: Methods and technique*. 2nd revised edition. New Delhi, India: New Age International (P) Limited Publishers.

Kowalczyk, D. 2015. *Descriptive research design, example and types.* [online]. Available at: <http://study.com/academy/lesson/descriptive-research-design-definition-examples-type.html> [Accessed: 3 January 2017].

Kozak, R. 2007. *Trends in labor statistics: Small- and medium-sized enterprises in the solid wood sectors of the European Union, 1995 to 2004*. Washington, DC: Rights and Resources Initiative (RRI).

Kuprenas, J.A. 2003. Project management actions to improve design phase cost performance. *Journal of Management in Engineering*, 19(1), pp. 25-32. https://doi.org/10.1061/(ASCE)0742-597X(2003)19:1(25)

Leedy, P.D. & Ormrod. J.E. 2010. *Practical research: Planning and designing*. 9th edition. Boston, NY: Pearson.

Mafimidiwo, B. & Iyagba, R. 2015. Comparative study of problems facing small building contractors in Nigeria and South Africa. *Journal of Emerging Trends in Economics and Management Sciences*, 6(2), pp. 101-109.

Martínez-Román, J.A., Tamayo, J.A. & Gamero, J. 2017. Innovativeness and its influence on growth and market extension in construction firms in the Andalusian region. *Journal of Engineering and Technology Management,* no.43, pp. 19-33. https://doi.org/10.1016/j.jengtecman.2016.11.002

Mitrofanova, I.V., Russkova, E.G., Batmanova, V.V. & Shkarupa, E.A. 2015. Drivers of the regional economic growth and the problem of ''white elephants'' of the Russian Olympic Megaproject "Sochi 2014''. *Mediterranean Journal of Social Sciences,* 6(6), pp. 267-276. https://doi.org/10.5901/mjss.2015.v6n4s2p267

Muazu, D.A. & Bustani, S.A. 2004. A comparative analysis of litigation among foreign and indigenous construction firms in Nigeria. *ATBU Journal of Environmental Technology,* 3(1), pp. 13-16.

Naoum, S. 2007. *Dissertation research and writing for construction students*. London: Routledge, Taylor & Francis.

Nigerian National Policy on Micro, Small and Medium Enterprises NPMSMEs) (2007).

Odediran, S.J., Adeyinka, B.F., Opatunji, O.A. & Morakinyo, K.O. 2012. Business structure of indigenous firms in the Nigerian construction industry. *International Journal of Business Research and Management*, 13(5), pp. 255-264.

Odonkor, S. 2011. Determinants of business failure: The perspective of SMEs building contractors in the Ghanaian construction industry. Unpublished M.Sc. thesis, Department of Building Technology, College of Architecture and Planning Kwame Nkrumah, University of Science and Technology, Kumasi.

Ofori, G. 1991. Programme for improving the performance of the contracting firms in developing countries. *Journal of Environmental Technology*, 9(1), pp. 19-38. https://doi.org/10.1080/01446199100000003

Ogunsemi, D.R. & Jagboro, G.O. 2006. Time-cost model for building projects in Nigeria. *Construction Management and Economics*, 24(3), pp. 253-258. https://doi.org/10.1080/01446190500521041

Olokoyo, S. 1999. *Managing your small-scale enterprises successfully: A guide to entrepreneurs, managers and students*. 3rd edition. Kaduna: Ola Jamon Printers & Publishers.

Omisore, B.O. & Abiodun, A.R. 2014. Organizational conflicts: Causes, effects and remedies. *International Journal of Academic Research in Economics and Management Sciences*, 3(6), pp. 118-137. https://doi.org/10.6007/IJAREMS/v3-i6/1351

Onugu, B.A.N. 2005. Small and medium-scale enterprises in Nigeria: The problems and prospects. Ph.D. thesis, St. Clements University, Alofi, Niue.

Pallant, J. 2013. *SPSS survival manual: A step-by-step guide to data analysis using IBM SPSS*. 5th edition. Crows Nest, Australia: Allen and Unwin.

Park, S.H. 2009. Whole life performance assessment: Critical success factors. *Journal of Construction Engineering and Management*, 13(5), pp. 1146-1149. https://doi.org/10.1061/(ASCE)CO.1943-7862.0000090

Quinlan, C. 2011. *Business research methods.* Andover, Hampshire, UK: South-Western Cengage Learning.

Shakantu, W.M., Kajimo-Shakantu, K., Saidi, F. & Mainga, W. 2006. Bridging the informal, formal and indigenous construction knowledge system to resolve the construction skills shortage. Paper delivered at the 4th Postgraduate Conference of the CIDB on Construction Industry Development, 8-10 October, Stellenbosch, South Africa.

SMEDAN (Small and Medium Enterprise Development Agency of Nigeria) 2009. Small business in Nigeria.

Sweis, R., Bisharat, L., Bisharat, S. & Sweis, G. 2014. Factors affecting contractor performance on public construction projects. *Life Science Journal*, 11(4), pp. 28-39.

Thwala, W.D. & Mvubu, M. 2008. Current challenges and problems facing small and medium-size contractors in Swaziland. *African Journal of Business Management*, 2(5), pp. 93-98.

Thwala, W.D. & Phaladi, M.J. 2009. An exploratory study of problems facing small contractors in the North West Province of South Africa. *African Journal of Business Management*, 3(10), pp. 533-539.

Uduak, I.I. 2006. Assessment of indigenous contractors' participation in construction project delivery in Nigeria. *The Quantity Surveyors*, 54(2), pp. 2-9.

Ugochukwu, S.C. & Onyekwena, T. 2014. Participation of indigenous contractors on Nigerian public sector construction projects and their challenges in managing working capital. *International Journal of Civil Engineering, Construction and Estate Management* 1(1), pp. 1-21.

Van Laerhoven, H., Van der Zaag-Loonen, H.J. & Derkx, B.H.F. 2004. A comparison of Likert scale and visual dialogue scales as response options in children's questionnaires. *Acta Paediatric*, 93(1), pp. 830-835. https://doi.org/10.1111/j.1651-2227.2004.tb03026.x

Wang, C., Lee, L.Y., Yap, H.B.J. & Abdul-Rahman, H. 2018. Capabilities-based forecasting model for innovation development in small and medium construction firms (SMCFS). *Journal of Civil Engineering and Management,* 24(3), pp. 167-182. https://doi.org/10.3846/jcem.2018.1626

Wasi, D., Bridge, A. & Skitmore, R.M. 2001. Factors affecting the performance of small indigenous contractors in Papua New Guinea. *The Australian Journal of Construction Economics and Building*, 1(1), pp. 80-90. https://doi.org/10.5130/AJCEB.v1i1.2282

Zhu, K. & Lin, L. 2004. A stage – by – stage factor control frame work for cost estimation of construction projects. In: Hampson, K. (Ed.). *Proceedings of Clients Driving Innovation International Conference* 25 – 27 October, Surfers Paradise, Australia. Brisbane, Australia: CRC for Construction Innovation.