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## Management Accounting Techniques and Project Performance of Major Construction Companies in Nigeria

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### **Abstract:**

*To remain competitive, construction companies must continually improve and one way is by use of the right MATs. In this regard, the adoption of MATs can help organizations to improve their project performance continually and consequently overall national economic development. Therefore, the study investigated influence of management accounting techniques on project performance of construction companies in Nigeria. The objectives were, to assess the performance level of construction companies in Nigeria, to examine the influence of activity-based costing (ABC), strategic analysis, and budgeting practices on project performance. The study used quantitative research design while the target population was all the 35 major construction firms. The sample size was 13 companies. The research used questionnaire to gather data from 170 managers. The study used descriptive statistics and inferential analysis. The study found that ABC, strategic analysis, and budgeting practices had positive relationship with project performance. The study concludes that the companies employed ABC to improve performance. The study concludes that most companies used both internal and external analysis to improve performance. The study concludes that many companies failed to involve all departments during budgeting. The research concludes that the government policies did not provide conducive business environment. The study recommends that companies should increase resources to complete projects within stipulated time frame. The study recommends that the policies should be enhanced by conducting researches and regular evaluation to improve business environment for the realization of improved project performance of the construction companies.*

**Keywords:** Management accounting techniques, activity-based costing, project performance, strategic analysis, and budgeting practices

### **1. Introduction**

Management accounting technique is a critical accounting resource that support firms to incorporate cost accounting data, financial, and nonfinancial information to improve their performance (Ballada, 2012). Management accounting can be defined as the process of supplying the managers and employees with relevant financial and nonfinancial information (Atkinson, Kaplan, Matsumara, & Young, 2012).

Management accounting techniques (MATs) have been categorized into traditional and modern techniques. The traditional MATs include standard costing, absorption costing, marginal costing, variance analysis, budgeting, and cost volume profit analysis (Georgiev, 2014). The modern MATs include; activity-based costing (ABC), target costing, kaizen costing, balance scorecard among others (Abdel-Kader & Luther, 2016).

The need to improve project performance in construction industries worldwide have become topical. For instance, the UK construction industry initiated several calls in this regard. These calls include the Simon (1944), Latham (1994) and Egan (1998) reports. In the US construction industry, rework (defect) contributes significantly to cost performance problems and accounts for an average of 5% of the total need to improve performance in construction industries worldwide have become topical.

According to Abdullahi (2015), MATs' adoption is very integral because it helps a firm to survive in the competitive market. These techniques help in providing an important competitive advantage for an organization that guides managerial action, motivates behaviors, supports and creates the cultural values necessary to achieve an organization's strategic objectives-better financial performance. According to Rickard and Kono (2013), the proper use of MATs is important because it is responsive to the demands of management and the environment thereby playing a key role in improving the overall firm performance. Was introduced in the UK construction industry after the Egan 1998 report. Key performance indicators consist of seven project performance indicators: construction cost, construction time, cost predictability, time predictability, defects, client satisfaction with product, client satisfaction with service and three business performance indicators namely: safety, profitability, and productivity.

### 1.1. Influence of MATs on Project Performance

It has been empirically established that usage of MATs influences project performance, especially with increased non-financial measures. For instance, a study by Al-Mawali, Sharif, Rumman, Kerzan, and Liu (2018) indicate that increased usage of MATs, including activity-based management, cost analysis, target costing, kaizen costing and balance scorecard resulted in high performance among construction firms. In yet another study, Kasravi and Ghasemi (2017) found that utilization of both traditional and modern MATs improves organizational performance.

Furthermore, Abdullahi (2015) observe that performance improvement is one of the major reasons for the firm to change its MATs. In support of the view of Abdullahi (2015), Achimugu and Ocheni (2015) suggests that increased usage of MATs is linked with good performance among construction companies. Therefore, to improve performance, many construction companies in both developed and developing countries have resorted to use of various MATs (Akenbor & Ibanichuka, 2012). Therefore, the current study investigated the influence of MATs on project performance of major construction firms in Nigeria.

### 1.2. Construction Companies in Nigeria

The construction sector is a key driver of economic growth; however, in the developing world with much emphasis on Nigeria, the sector has not achieved desirable performance (Ayodele & Falokun, 2003). The challenges of improving performance of the construction sector globally and in the African are no different in Nigeria. Nigerian construction sector performance has dwindled over the years (Obed, 2016) despite its notable contribution to creation of employment opportunities. The sector was once praised in terms of performance but has of late underperformed. The seriousness of this concern was echoed when the construction sector in Nigeria recorded an unprecedented -8% growth rate in 2015 (Ajibolade, 2017).

Additionally, Nigerian construction industry have reportedly been established to perform poorly in terms of quality of work and untimely completion of projects and this has partly been attributed to inadequate use of MATs (Oladimeji & Aina, 2018). The situation is worrying given the latest challenges in the construction sector. Despite the aforementioned concerns, the construction firms still have potentials to achieve desirable results as long they can effectively embrace one of the contributors to improved performance, MATs (Tiruneh & Fayek, 2020).

In Nigeria, the construction industry is reported to be very vibrant and one of the largest in Africa (Adebayo, 2002 and Odediran et al., 2012). The construction market in Nigeria is made up of 78% indigenous firms and 22% foreign firms (Aniekwu, 1995). The indigenous firms are predominately small and medium – sized.

The larger indigenous construction firms are small enterprises relative to most foreign firms (Adams, 1997). Nonetheless, the Nigerian construction industry has also been challenged to improve its performance. Evidences of poor performance in terms of cost over runs, time over runs, poor quality of work, low productivity among other problems is replete in the Nigerian construction industry literature (Tunji-Olayeni et al., 2012; Oke and Abiola – Falemu, 2009; Idoro and Akande- Subar, 2008; Omoregie and Radford, 2006; Aibinu and Jagboro, (2002).

The most crucial step in performance improvement is not the intervention, but rather the diagnosis because it is the effective diagnosis of performance needs and deficiencies that bring about success in performance improvement (Darryl, 2007).

Improvement cannot be gained without measurement (evaluation) of performance (Baldwin et. al., 2001). According to Osman (1999), measurement is the trigger for improvement. Like Rankin et. al., (2008) opined you cannot improve what you do not measure. The big question then is, what is it that should be measured (evaluated) in a construction project that would bring about success in performance improvement?

Previously performance was assessed by financial measures such as return on investment (ROI), the pyramid of financial ratio, the discounted cash flow (DCF), residual income (RI), economic value added (EVA) and cash flow return on investment (FROI). However, researchers (Letza, 1996; Kaplan, 1984 and Bourne et al., 2000) started to become dissatisfied with these kind of assessment because financial performance measures were thought to be lagging. For example, financial data are reported in a lagging manner that inhibits a company from using it in steering a company effectively and by solely tracking financial data costs are kept down, such as that of overheads, which if not balanced, can seriously affect quality (van Schalkwyk, 1998).

This dissatisfaction with financial performance measures led to the introduction of contemporary performance measures like the balance score card, performance prism, performance pyramid and quality models. Some of these contemporary models have been adapted to construction while other performance measurement frameworks specifically for the construction industry has been developed. Nigeria, the construction industry is reported to be very vibrant and one of the largest in Africa (Adebayo, 2002 and Odediran et al., 2012). The construction market in Nigeria is made up of 78% indigenous firms and 22% foreign firms (Aniekwu, 1995). The indigenous firms are predominately small and medium – sized. The larger indigenous construction firms are small enterprises relative to most foreign firms (Adams, 1997). Nonetheless, the Nigerian construction industry has also been challenged to improve its performance. Evidences of poor performance in terms of cost over runs, time over runs, poor quality of work,

low productivity among other problems is replete in the Nigerian construction industry literature (Tunji-Olayeni et al., 2012; Oke and Abiola – Falemu, 2009; Idoro and Akande- Subar, 2008; Omoregie and Radford, 2006; Aibinu and Jagboro, (performance evaluation is a vital tool for assessing management performance and formulating corporate strategies. The Nigerian construction industry is reported to be very vibrant and one of the largest in Africa. It is made up of 78% indigenous firms and 22% foreign firms. The indigenous firms are predominately small and medium – sized. However, the Nigerian construction industry has been challenged to improve its performance because of reports of performance problems in terms of cost over runs, time over runs, poor quality of work, low productivity among other problems. The aim of the study was to establish the measures used by construction SMEs for evaluating performance. The study employed case study research design. Five construction SMEs in Lagos, Nigeria was selected as case studies. The findings revealed that construction SMEs do not use any of the established performance measurement frameworks for evaluating performance. The main performance measures used by construction SMEs are cost, time, quality, customer satisfaction, profitability of the project, labor productivity, safety and team work. It was also established from the study that construction SMEs do not use supply chain management and employee satisfaction. It was suggested that construction SMEs should also use supply chain management and employee satisfaction because these measures have been found to impact positively on firms' performance. In Nigeria, the construction industry is reported to be very vibrant and one of the largest in Africa (Adebayo, 2002 and Odediran et al., 2012). The construction market in Nigeria is made up of 78% indigenous firms and 22% foreign firms (Aniekwu, 1995). The indigenous firms are predominately small and medium – sized. The larger indigenous construction firms are small enterprises relative to most foreign firms (Adams, 1997). Nonetheless, the Nigerian construction industry has also been challenged to improve its performance. Evidences of poor performance in terms of cost over runs, time over runs, poor quality of work, low productivity among other problems is replete in the Nigerian construction industry literature (Tunji-Olayeni et al., 2012; Oke and Abiola – Falemu, 2009; Idoro and Akande- Subar, 2008; Omoregie and Radford, 2006; Aibinu and Jagboro, (2002).

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Studies have established the linkage between MATs and performance. A study by Aksoylu, and Aykan (2013) revealed a positive link between MATs and performance of Jordanian firms while Van Der Stede (2014) found that budgeting practices have a negative link with performance. Abdel-Kader and Luther (2016) found no relationship between MATs and Malaysian firm performance while Salawu, Oyesola, and Tajudeen (2015) found that some manufacturing firms in Nigeria demonstrated improved performance after ABC adoption.

From the past studies, there seems to be mixed outcome on effective MATs that could improve performance of firms. Further, most studies were done on different industries hence it is prudent a study on construction firms in Nigeria be conducted. Some of the studies only used one technique of MATs while this study will use ABC, strategic analysis, and budgeting practices to establish how each influence performance. Therefore, due to contradicting influence of MATs on performance, the study investigated how MATs' influence project performance of major construction firms in Nigeria.

### 1.3. Research Objectives

- To determine the level of project performance of major construction companies in Nigeria.
- To examine the influence of ABC on project performance of major construction companies in Nigeria
- To assess the influence of strategic analysis on project performance of major construction companies in Nigeria
- To evaluate the influence of budgeting practices on project performance of major construction companies in Nigeria.

### 1.4. Conceptual Framework

The dependent variable is the firm performance and the independent variables included ABC, strategic analysis, and budgeting practices. Figure 1 shows the diagrammatical representation among variables.

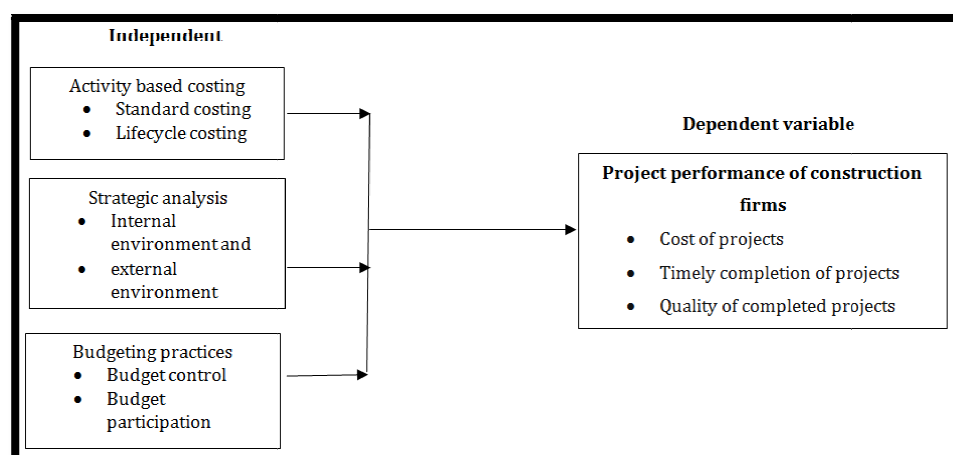


Figure 1: The Conceptual Model  
Source: Asikogu Chinomso (2021)

## 2. Literature Review

### 2.1. Theoretical Frameworks

#### 2.1.1. Contingency Theory

The study was premised on the contingency theory that was developed in the 1960s by Fred Fiedler. The theory focuses on specific significant elements that aid the finance managers to make decision on suitable techniques (Burns & Stalker, 1961). The theory states that no universally appropriate management accounting systems can apply equally to all organizations in all circumstances. Therefore, each organization adopt its own MATs that helps in promoting performance (Islam & Hui, 2012). The Contingency theory was enforced by Otley (1980) and he observed that there is no sole overall definitive accounting technique that can be enforced to all firms. However, in criticizing the theory, Abba, Yahaya, and Suleiman (2018) argued that the theory is flawed because firms cannot force fit contingencies.

#### 2.1.2. Institutional Theory

The study also used institutional theory that was founded by Rowan and Meyer in 1977. The theory is anchored on the social constructs that help define the structure and processes of MATs in an organization (Scott, 2001). Under this theory, MATs are conceived as routine, and potentially institutionalized, organizational practice. The institutional theory argue that institutionalized MAs can both shape and be shaped by institutions that manages firm activities. However, the theory has been criticized by Bardhan (1989) who argues that the theory puts an enormous amount of restraint on management to conform to requirements within its own environment. Too much constraint could prove to be damaging to the firm since it could inhibit creativity, and diversity within a given field.

#### 2.1.3. Transaction Cost Theory

The study was guided by the transaction cost theory put forth by Commons (1931). The theory opines that the optimum organizational structure is one that achieves economic efficiency by minimizing the costs of exchange during negotiations for services to be provided. It suggests that each type of transaction produces coordination cost of monitoring, controlling and managing of project so as to obtain good performance. The theory, therefore, argue that such costs are to be distinguished from production costs and that a decision maker can choose to use accounting techniques that augers well with firm performance so as to introduce transaction costs during negotiations. However, then theory has been criticized on the basis that minimization of transaction cost could have little advantage if transaction specific assets are not valued in the market. Secondly, when a transaction is initiated, there is no guarantee that this could minimize transaction negotiations. Such a scenario could as well results to costly bargaining. This means the theory underestimates costs related with organizing transaction (Cuypers, Hennart, Silverman, & Ertug, 2021).

### 2.2. Empirical Reviews

#### 2.2.1. Project Performance

Project performance measures are vital signs of an organization which helps to recognize whether the activities of a process or the outputs of the process achieve the specified objectives. (Horonec, 1993). They can be used to translate the strategy of the organization into a set of goals and objectives and the results obtained through the measures reflect the successfulness of achieving the strategy (Eccles, 1991). Performance measures indicate the priority factors of the organization and the way the employees should behave to give maximum outcome to the organization (Neely 2002)

In Nigeria, a study by Ogunde et al. (2016) established that satisfaction of client with product and services, timely deliveries of services and productivity as well as safety can be used to measure performance. In another study in Netherlands by Van Der Stede (2014) found that most organizations in Netherlands measured firm performance using project cost, project quality, customer satisfaction and timely completion of projects. Also, Ibarrondo-Dávila, López-Alonso, and Rubio-Gámez (2015) study in Spain established that delivery of quality of delivered projects, safety of projects, timely delivery of projects, productivity, and customer satisfaction can be used to measure performance.

### 2.2.2. Activity Based Costing and Project Performance

A study by Saaydah and Khatatneh (2014) evaluated the effects of MATs on performance of Jordan companies. The study found that there was adoption of ABC as measured by target costing. ABC had positive significant relationship with performance. Similarly, Mazumder (2017) carried out a study on assessment of MATs and performance of Bangladesh firms. The study found that ABC as measured by standard costing and cash-flow analysis had positive significant relationship with performance.

Further, Dugdale et al. (2015) carried out a study on impact of MATs on performance of UK service firms. ABC measures such as standard costing, absorption costing and marginal costing were found to have positive significant relationship with performance. The results are consistent with Anand, Sahay, and Subhashish (2014) who studied the association between MATs and performance among Indian corporations. The study found that ABC as measured by accurate cost and profit information had positive significant relationship with firm performance.

Moreover, Karanja, Mwangi, and Nyaanga (2012) conducted a study on adoption of modern MATs to enhance performance among SMEs in Kenya. Data was analyzed using regression analysis. ABC as measured by target costing and operational costs had positive significant relationship with SMEs' performance. Similarly, Salawu et al. (2015) studied the influence of MATs adoption on performance among agricultural Companies-Nigeria. ABC technique was measured using target costing. A positive significant relationship was found between ABC and performance.

Further, Aksoylu and Aykan (2013) investigated effects of MATs on performance of industries in Nigeria. Measures of ABC (life cycle costing) was found to have negative influence on performance. Meanwhile, Isa and Thye (2016) study focused on effect of MATs on performance in construction firms in Malaysia. Both standard and Kaizen costings were used as measures of ABC. The study found that standard and Kaizen costings had negative relationship with performance.

### 2.2.3. Budgeting Practices and Project Performance

A study by Ashfaq, Younas, Usman, and Hanif (2014) investigated the role of traditional and contemporary MATs on performance of Pakistani financial and service sector. It was found that budgeting as measured by budget authorization had positive significant relationship with financial sector performance. In uniformity, another study by Melek (2017) was on impact of MATs on performance of 500 Turkey firms. The study used budget participation and expenditure auditing to measure budgeting practices. It was found that there was a positive relationship between budget practices and performance existed.

Another study was done by Qi (2014) on impact of MATs on performance of SMEs in China. Budgeting process was measured by budgeting control and goals. It was found that budgeting process had positive significant relationship with firm performance. The results are similar with a study by Mohammed and Ali (2013) based on the effectiveness of MATs and performance of Telkom Kenya. The study found that budgeting process such as regular budgeting had statistically significant positive relationship with performance.

Furthermore, another study by Van Der Stede (2014) investigated the effect of MATs on performance of Netherlands' construction firms. The study found that budgeting practices as measured by budgetary control and budgeting participation had negative link with performance. However, a study by Wairegi (2011) was on the relationship between MATs and SMEs' performance in Kenya. Budgeting practices was measured by budgeting authorization. It was found that there was no significant relationship between budgeting practices and performance.

### 2.2.4. Strategic Analysis and Project Performance

A study by Mbawuni and Anertey (2014) assessed the influence of MATs on performance of Nigerian' communication firms. It was found that strategic analysis as measured by internal environment scanning measures such as skills and knowledge had positive significant relationship with performance. In support, the study by Aksoylu and Aykan (2013) examined effects of MATs on performance of Turkey businesses. Strategic analysis measures were cost, customer, and competitor-oriented techniques. It was found that strategic analysis and planning had significant weak positive impacts on performance.

Another study by Gichaaga (2014) investigated the effects of MATs on performance of Kenya's manufacturing firms. Measures of strategic analysis (customer and employee satisfactions) had positive relationship with performance. Similarly, Mbawuni and Anertey (2014) examined contribution of MATs on performance of Nigeria's telecommunication firms. Strategic analysis practices (external environmental analysis) had positive relationship with performance.

Again, Adler, Everett, and Waldron (2015) study investigated impact of MATs on the performance of Chile's public institutions. The study found that strategic analysis (internal and external environment) had significant negative relationship with performance. Similarly, Amoako (2013) studied the link between MATs and performance of Nigerian SMEs. It was found that strategic analysis as measured by competitor scanning had a negative relationship with performance.

Further, Rickard and Kono (2013) study was based on effect of MATs on performance of construction firms in Belgium. Strategic environmental analysis was found to have negative relationship with performance. Similarly, Musso and Francioni (2012) study established the relationship between strategic analysis and performance of engineering firms in Turkey. Strategic analysis as measured by competitor's responsiveness had negative relationship with performance.

### 2.3. Research Gap

From the studies, it is clear that there were mixed results on the relationship between MATs and project performance. For instance, some studies found (Abdel-Kader & Luther, 2016; Adler et al., 2015) a negative relationship between budgeting practices, strategic analysis, activity based costing and project performance. Meanwhile, others (Mohammed & Ali, 2013; Mbawuni&Anertey, 2014) found a positive relationship. On the other hand, Wairegi (2011) found no significant relationship between MATs and project performance. Therefore, such inconsistent and mixed results call for the need for the current study to bridge the gaps.

## 3. Methodology

### 3.1. Research Design

The paper adopts case study research design. Case study is an empirical enquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident (Yin, 2003). Case studies are most suitable for answering the how questions. Case studies provide a rich understanding of the context and processes of a research (Morris and Wood, 1991)

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The study utilized descriptive research design (Myers, Well, & Lorch Jr, 2013) because it helped in measuring the accuracy of the study variables by describing the population's characteristics as they exist at present thereby minimizing biasness and also helps in maximizing the reliability of the collected evidence.

### 3.2. Target Population

There are a total of 35 major construction companies in Nigeria as shown in Appendix I. The study focused on managers from all departments (finance, sales and marketing, technical, operations, human resource, and customer services).

### 3.3. Sample Size and Sampling Procedures

The study used Yamane formula (Yamane, 1967).

Yamane formula,  $n = N \div [1 + N(e^2)]$

Whereby;

$n$ : Samplesize

$N$ : Population:

$e$ : Marginerrorof 0.05%

Therefore,  $n = 35 \div [1 + 35(0.05^2)]$

Companiessamplesize = 13

The questionnaire was distributed through stratification sampling method to all senior managers.

### 3.4. Description of Research Instruments

The study used questionnaire because they generate data that are easy and fast to analyze and can be collected within shorter period of time (Creswell, 2013).

#### 3.4.1. Reliability of Research Instruments

The study used Cronbach Alpha to assess the extent of the reliability of the questionnaire. According to Pallant (2015), the thumb rule on the acceptable level of Cronbach Alpha for a reliable result is 0.65 or higher. The reliability score for the questionnaire was 0.71.

#### 3.4.2. Validity of Research Instruments

The study used both face and construct validity. Face validity ensured that the questionnaire conformed to common sense reasoning with respect to the research problem while construct validity ensured that all the key variables that relates to the topic were well captured (Dul&Hak, 2015).

Variable	Symbol	Indicators	Measurement	Justification Based on Empirical Evidence
Project performance	P	Project quality	Lifespan of projects	Said et al. (2013)
		Timely completion	Duration taken to deliver projects	
		Project cost	Affordability of projects	
Activity based costing	ABC	Standard costing	Realistic prices of products, allocation of customer driven indirect costs and pricing decisions	Dugdale et al. (2015); Abdel-Kader & Luther, (2016); Saaydah and Khatatneh (2014)
		Lifecycle costing	Adequacy of maintenance cost and operational costs to obtain better revenue generation	
Strategic analysis	SA	Internal environment	Use of employee performance evaluation and improving their skills through training.	Mbawuni and Anertey (2014); Adler et al. (2015)
		External environment	Management of environmental operational risks, competitor positioning and comparison of products among construction firm, and competitors	
Budgeting practices	BP	Budget participation	Pre-budget participation across departments, involvement of qualified officers during budgeting and engaging final authorizing officers in budgeting.	Ashfaq et al. (2014); Qi (2014); Melek (2017)
		Budget control	Regular preparation of budget for future period, presence of evaluation and auditing of finances by external auditors, and ensuring funds are allocated based on urgency and priority of projects	

Table 1: Operationalization of Study Variables

### 3.5. Description of Data Analysis Procedures

The returned questionnaire was coded, processed, and analyzed by use of SPSS version 20.0. The study made use of descriptive statistics. The study also used Pearson correlation and multiple regression model.

#### 3.5.1. Analytical Model

To generate inferential statistics, multiple regression analysis was utilized to establish the relationship between ABC, strategic analysis, budgeting practices, and firm performance.

$$P = \alpha_0 + \beta_1 ABC_1 + \beta_2 SA_2 + \beta_3 BP_3 + \varepsilon$$

Where:

- $\alpha_0$  - Is the constant
- $\beta_1, \beta_2, \beta_3 \& \beta_4$  - Coefficients of independent and intervening variables
- P - Firm performance
- ABC - Activity based costing

SA	-	Strategic analysis
BP	-	Budgeting practices
$\varepsilon$	-	Residual error term

### 3.5.2. Diagnostic Tests

The study carried out diagnostic tests (normality, heteroscedasticity, and multicollinearity). The diagnostic tests helped in establishing the reliability of the regression model.

- The normality test using Shapiro Wilk test was done to help in ascertaining whether data is normally distributed or vice versa (Schmidt & Finan, 2018).
- The study used the Variance of Inflation (VIF) to test multicollinearity. VIF values less than 10 implied that there was no multicollinearity and vice versa (Disatnik & Sivan, 2016).
- The study used Breusch-Pagan test to find out presence of absence of heteroscedasticity. The thumb rule in determining heteroscedasticity is when the requirement of constant variance is violated (Klein, Gerhard, Büchner, Diestel, & Schermelleh-Engel, 2016).

## 4. Data Presentation, Discussion, and Interpretation

### 4.1. Presentation of Descriptive Statistics for Research Questions

#### 4.1.1. The Level of Project Performance of Construction Companies in Nigeria

The results for level of project performance of construction companies are shown in Table 2

	Strongly Disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly Agree (%)	Mean
Average time taken to deliver projects is within stated time	20.0	42.1	12.6	12.6	12.6	2.56
Increased projects' productivity to meet customer demands	7.4	18.4	8.4	36.8	28.9	3.32
The organization insist on the completion of quality projects that has longer lifespan	5.3	11.6	12.6	26.3	44.2	3.93
Presence of project acceptability by customers	8.4	10.6	3.2	38.8	36.8	3.85
Delivery of quality affordable projects based on customer segments	8.4	22.1	11.6	23.2	34.7	3.54

Table 2: Descriptive Statistics for Level of Project Performance of Construction Companies

Key: Observations = 95, Minimum = 1 and Maximum = 5

The results in Table 2 show that 42.1% and 20.0% of the respondents disagreed and strongly disagreed respectively that the average time taken to deliver projects is within stated time frame thus ensuring improved performance with a mean score was 2.56. The results are inconsistent with a study by Tiruneh and Fayek (2020) who found that timely deliveries of services improve performance. The results show that most firms have increased projects' productivity levels to meet customer demands thereby improving performance as supported by 36.8% (agree) and 28.9% (strongly agree) of the respondents with a mean score of 3.32. In agreement, Ogunde et al. (2016) used productivity to measure performance and found that increase in productivity indicates improved project performance. The results established that the firms insisted on the completion of quality projects that has longer lifespan as supported by 44.2% (strongly agree) and 26.3% (agree) of the respondents with a mean score of 3.93. The results resonate with a study by Van Der Stede (2014) that found that project adherence to quality promotes customer satisfaction thereby increasing performance. Again, 34.7% and 23.2% strongly agreed and agreed, respectively that there was delivery of quality affordable projects based on customer segments with a mean score of 3.54. In agreement, a study by Rickard and Kono (2013) found that several companies resorted to delivery of quality but affordable projects and this improved performance.

#### 4.1.2. Influence of ABC on Project Performance of Construction Companies in Nigeria

The results for the influence of ABC on the performance of construction companies are shown in Table 3.



	<b>Strongly Disagree (%)</b>	<b>Disagree (%)</b>	<b>Neutral (%)</b>	<b>Agree (%)</b>	<b>Strongly Agree (%)</b>	<b>Mean</b>
Firms used target costing to ascertain realistic prices of products/services	8.4	15.8	13.7	32.6	29.5	3.59
Firms utilized standard costing to assist in pricing decisions	24.2	40.0	9.5	13.7	12.6	2.51
Firms used lifecycle costing on operations to generate better revenue	17.4	36.3	8.4	17.9	20	3.14
Firms utilizes costing techniques to promote activity assessment and evaluation	7.4	24.2	6.3	32.6	29.5	3.53
Costing techniques embraced to facilitate product mix decision	5.3	17.9	6.3	43.2	27.4	3.69
Availability of adequate maintenance and operational costs	14.7	49.5	5.3	17.9	12.6	2.64

*Table 3: Influence of ABC on Project Performance of Construction Companies in Nigeria*

*Key: Observations = 95, Min = 1 and Maximum = 5*

The results in Table 3 indicate that 32.6% and 29.5% agreed and strongly agreed that the organization uses target costing to ascertain realistic prices of products and services with a mean of 3.59. The results are in support of a study by Saaydah and Khatatneh (2014) that found that several firms adopted ABC as measured by target costing. It was found that 40.0% and 24.2% respondents disagreed and strongly disagreed that their respective organizations utilize standard costing to assist in pricing decisions to improve organizational performance with a mean score of 2.51. The results go against a study by Mazumder (2017) that established that use of standard costing had positive significant relationship with performance an indication that it leads to improved performance. The results show that 36.3% and 17.4% disagreed and strongly disagreed respectively that organizations use lifecycle costing on operations to generate better revenue with a mean score of 3.14. The results are supported by another study by Aksoylu and Aykan (2013) that found that life cycle costing had negative influence on performance and this could be reason the construction firms in Nigeria ignored it. Further, it shows that most respondents said that organization utilized costing techniques to promote activity assessment and evaluation to promote performance as reported by 32.6% (agreed) and 29.5% (strongly agreed) with a mean score of 3.53. The results concur with a study by Anand et al. (2014) that found that accurate cost and profit information had positive significant relationship with firm performance which was an indication that their usage increases assessment of activities and consequently improves performance. The results also show that majority respondents agreed at 43.2% and strongly agreed at 27.4% that costing techniques has been embraced to facilitate product mix decision to suit customer demand with a mean score of 3.69. However, a study by Isa and Thye (2016) found that use of costing techniques such as standard and Kaizen costing had negative relationship with performance.

#### 4.1.3. Influence of Strategic Analysis on Project Performance of Construction Companies in Nigeria

The results for the influence of strategic analysis on the project performance of construction companies are shown in Table 4.

	<b>Strongly Disagree (%)</b>	<b>Disagree (%)</b>	<b>Neutral (%)</b>	<b>Agree (%)</b>	<b>Strongly Agree (%)</b>	<b>Mean</b>
Strategic analysis assists in the management of operational risks	4.2	15.8	9.5	41.1	29.5	3.76
Firms used both internal and external analysis to assess competitor positioning	7.4	17.9	5.3	42.1	27.4	3.64
Firms employ strategic analysis to aid in strategic planning	8.4	14.7	6.3	32.6	37.9	3.77
Firms embrace internal environmental analysis to evaluate employee productivity	9.5	11.6	4.2	40	34.7	3.79
Firms use external environment analysis to facilitate comparison between firms and competitors	6.3	15.8	7.4	32.6	37.9	3.8
Employees are regularly subjected to regular role-based training to sharpen their skills	17.9	52.6	7.4	12.6	9.5	2.43

*Table 4: Strategic Analysis and Project Performance of Construction Companies in Nigeria*

*Key: Observations = 95, Minimum = 1, and Maximum = 5*

The results presented in Table 4, shows that 41.1% and 29.5% of the respondents agreed and strongly agreed respectively that strategic analysis assists in the management of environmental operational risks to promote performance with a mean score of 3.76. The results corroborate another study by Mbawuni and Anertey (2014) that found that firms that used strategic analysis exhibited improved performance. It was also found that 42.1% and 27.4% strongly agreed and agreed, respectively that organizations used both internal and external analysis to assess competitor positioning so as to promote performance with a mean score of 3.64. The results are in concurrence with another study by Adler, Everett, and Waldron (2015) that found that strategic analysis as measured by internal and external environment was used by several firms. The results also show that most organizations employed strategic analysis to aid in strategic planning to improve project performance as supported by 37.9% and 32.6% strongly agreed and agreed, respectively with a mean score of 3.77. The results are in uniform with a study by Aksoylu and Aykan (2013) that found that that strategic analysis as measured by strategic planning had significant weak positive impacts on performance an indication that the use of strategic planning leads to improved performance. On whether the firms used external environment analysis to facilitate comparison between firms and competitors to improve performance, 37.9% and 32.6% of the respondents strongly agreed and agreed respectively that indeed they used external environment analysis to improve performance with a mean score of 3.80. In agreement, a study by Mbawuni and Anertey (2014) found that use of strategic analysis practices such external environmental analysis had a positive relationship with performance an indication that the use of external environmental analysis increases performance. Lastly, on whether employees are regularly subjected to role-based training to sharpen their skills to improve performance, 52.6% disagreed while 17.9% strongly disagreed with a mean value of 2.43. In disagreement, Mbawuni and Anertey (2014) found that most firms used internal environment scanning measures such as training to improve skills and knowledge.

#### 4.1.4. Influence of Budgeting Practices on Project Performance of Construction Companies in Nigeria

The study sought to establish the influence of budgeting practices on project performance of construction companies. The results are shown in Table 5.

	<b>Strongly Disagree (%)</b>	<b>Disagree (%)</b>	<b>Neutral (%)</b>	<b>Agree (%)</b>	<b>Strongly Agree (%)</b>	<b>Mean</b>
Firms allow for pre-budget participation across the departments	15.8	55.8	6.3	12.6	9.5	2.44
Firms regularly prepares budget for future period to avoid project failures	2.4	1.8	5.5	41.6	48.7	3.67
Final budgeting authorizing officers are normally involved	8.4	20	10.5	33.7	27.4	3.52
Evaluation and auditing of finances are subjected to qualified external auditors	4.2	14.7	11.6	38.9	30.5	3.77
Qualified officers oversee final budget authorization to ensure funds good use	22.1	45.3	8.4	12.6	11.6	2.46
Funds are allocated based on urgency and priority of projects	6.3	10.5	6.3	35.8	41.1	3.95

*Table 5: Budgeting Practices on Project Performance of Construction Companies in Nigeria*

*Key: Observations = 95, Minimum = 1, and Maximum = 5*

In Table 5, it was found that 55.8% and 15.8% disagreed and strongly disagreed respectively that firm allows for pre-budget participation across the departments to enhance adequate distribution of resources for better performance with a mean score of 2.44. The results contradict a study by Melek (2017) that found that inclusive budget participation increased performance scores as projects were adequately financed. On whether the firm regularly prepares budget for future period to avoid project failures thus promoting performance, 48.7% of the respondents strongly agreed while 41.6% agreed with the statement with mean score of 3.67. The results agree with a study by Mohammed and Ali (2013) that found that budgeting process such as regular budgeting was significantly and positively related with performance. Regarding whether final budget authorizing officers are normally involved to ensure resources not mishandled, 33.7% and 27.4% agreed and strongly agreed respectively with a mean value of 3.52. The results are in agreement with another study by Ashfaq et al. (2014) who found that firms used relevant authorization officers to ensure accountability. Results also show that 38.9% and 30.5% agreed and strongly agreed that evaluation and auditing of finances are subjected to qualified external auditors with a mean score of 3.77. Lastly, regarding whether budgeting processes ensure that funds are allocated based on urgency and priority of projects, 41.1% strongly agreed and 35.8% agreed with a mean of 3.95. The results resonate with a study by Qi (2014) that found that established that prompt allocation of funds positively influence firm performance.

#### 4.2. Correlation Analysis

The study conducted a correlation analysis to determine the relationship between two variables as presented in Table 6.

		<b>ABC</b>	<b>Strategic Analysis</b>	<b>Budgeting Practices</b>	<b>Performance</b>
ABC	Pearson Correlation	1			
	Sig. (2-tailed)				
Strategic analysis	Pearson Correlation	.280**	1		
	Sig. (2-tailed)	0.006			
Budgeting practices	Pearson Correlation	0.136	0.157	1	
	Sig. (2-tailed)	0.19	0.13		
Performance	Pearson Correlation	.232*	.206*	0.259*	1
	Sig. (2-tailed)	0.024	0.045	0.012	

*Table 6: Correlation Analysis*

*Observation (N) = 95*

*\*. Correlation Is Significant at the 0.05 Level (2-Tailed)*

*\*\*. Correlation Is Significant at the 0.01 Level (2-Tailed)*

According to Table 6, ABC had a positive Pearson correlation with firm performance at 0.232 and with a P-value of .024. The results are in agreement with another study by Karanja et al. (2012) that found that activity costing increased organizational performance. The study also found that strategic analysis was positively correlated with firm performance ( $r=.206$ ) and significantly related (P-value = .045). The results concur with another study by Gichaaga (2014) that found that strategic analysis had positive relationship with firm performance. Further, budgeting practices was also positively correlated with firm performance ( $r = .259$ ) and significantly related (P-value = 0.012). The results are in uniform with another study by Melek (2017) found that budgeting practices positively related with organizational performance.

#### 4.3. Diagnostic Tests

In this section, the study sets to assess the reliability of the regression model. The results for diagnostic tests are presented in Table 7.

	Normality	Multicollinearity	Heteroscedasticity
Variables	Sig.	VIF	Sig
Firm Performance	0.272		
ABC	0.523	1.264	0.661
Strategic analysis	0.826	1.247	0.407
Budgeting practices	0.149	1.037	0.712

Table 7: Results for Diagnostic Tests  
Observation (N) = 95

#### 4.4. Dependent variable: Project Performance

The results shown in Table 7, the normality test using Shapiro Wilk test) indicate that projects' performance had a p-value of 0.272, ABC had a p-value of 0.523, strategic analysis had a p-value of 0.826, budgeting practices had a p-value of 0.149. The data is normally distributed hence the null hypothesis of non-normal distribution of data is rejected. As shown in Table 8, the VIF value for ABC is 1.264, for strategic analysis is 1.247, for budgeting practices is 1.037. The results mean that data was free from biasness. The results in Table 8 reveal that ABC, strategic analysis, and budgeting practices had values p-values of 0.661, 0.407, and 0.712, respectively. Based on the results, heteroscedasticity is absent hence, the requirement of constant variance is not violated.

#### 4.5. Regression Model

The regression model results are presented in Table 8.

Dependent variable = Project performance				
Variables	Standardized Coefficient (Beta)	Standard errors	t-value	p-value
Constant	0.654	5.508	0.119	0.906
ABC	0.265	0.131	3.631	0.03
Strategic analysis	0.316	0.104	3.093	0.003
Budgeting practices	0.231	0.117	2.478	0.015
R	(.496 <sup>a</sup> )			
Adjusted R square	(0.213)			
ANOVA:				
F-statistic (p-value)	7.355 (0.000 <sup>b</sup> )			
	N = 95			

Table 8: Regression Analysis  
<sup>a</sup> = Constant; <sup>b</sup> = Coefficients of Each Variable.  
Significance Level = 0.05

Results presented in Table 8 show that the model was good fit as explained by an R of 49.6%; it is about 50% of the variation in firm performance. ANOVA results reveal that the p-value is 0.000; hence the model is reliable.

The results show that ABC was significant and positively related with firm performance ( $\beta = .265$ , p-value = .030) at the 5% level. In agreement, Saaydah and Khatatneh (2014) found a positive relationship between ABC and performance. Further, strategic analysis was found to be significant and positively related with firm performance ( $\beta = .316$ , p-value = .003) at the 5% level. In the contrary, Adler et al. (2015) found that strategic analysis had significant negative relationship with performance. The results presented in Table 9 show that budgeting practices had significant and positive relationship with firm performance ( $\beta = .231$ , p-value = .015) at the 5% level. The results are similar to Qi (2014) study who found that budgeting process had positive significant relationship with firm performance.

## 5. Conclusions and Recommendations

### 5.1. Conclusions

The study concluded that most construction projects did not meet time frame set for completion of projects. The untimely completion could be attributed to inadequate resources; both human and financials. The study concludes that

most organizations did not utilize standard and lifecycle costing to assist in pricing decisions and to generate revenues to improve organizational performance. Thus, it can be said that several organizations ignored use of standard costing while making pricing decisions thereby posing a negative effect on performance of the construction firms in Nigeria.

Further, the study concludes that firm failed to regularly subject employees to role-based training. The lack of role-based training could be attributed to inadequate funds, lack of goodwill, and the incapacity of the construction firms to offer training services. The study concludes that most firms did not allow departmental pre-budget participation and this posed negative impact on project performance due to a lack of all-inclusive budgeting process. The failure to allow for pre-budgeting could be as a result of the unwillingness by the management to embrace all departments.

## 5.2. Recommendations

The study recommends that companies can ensure timely completion of projects through provisions of adequate resources, continuous supervision, and monitoring as well as evaluation of progress of projects to ensure that issues that could hamper completion are minimized. The companies should also ensure that all employees and in particular project team are frequently subjected to role-based internal training to increase their knowledge and skills for effective projects' implementation.

The study recommends that the construction companies' institutional frameworks and policies should be enhanced to provide conducive business environment for the realization of improved performance of the construction companies. For instance, the government through policy makers can research, evaluate and come up with policies that are adaptable to changing construction business conditions. The government could also come up with strategies that unearths the potential areas of conflicts and difficulties that inhibits growth of construction companies to promote successful identification of policy gaps that can be improved to support fair competition.

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### Appendix

Apave Nigeria	G. Cappa PLC
Arab Contractors	Gadiel-Liwet Inventions
Banksome Group Of Companies	JDB Nigeria Ltd
Bethel Engineering Services	Ngamec Nigeria Limited
Bitsworks	Costain West Africa
BrickHouse Construction Company	Paulson Steel & Construction Works
Builder's Resources Nigeria Limited <sup>8</sup>	Penizik Nigeria
C & C Construction Co. Ltd	Monier construction company
Dutum Company Limited	Snesis Engineering Services Ltd
Dantata and Sawoe construction company (Nigeria) limited	STP Consult
Enerco Nigeria Ltd	Sunbarn Nigeria Limited
GIAB Nigeria Ltd	Reynolds construction company
Heavens Contractors Ltd	Bloomfield Nigeria
Julius Berger	Brunelli Construction Co. Nig Ltd
Oat Construction Nigeria Ltd	D-LUX Construction Services LTD
Orioncore Company Limited	Fitobricks Service Limited
Paul-B Nigeria PLC	Setraco Nigeria Ltd
Saidi Nigeria Ltd	

*Table 9: List of Major Construction Companies in Nigeria*