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Effect of Project Cost Factors on the Financial Performance of Selected Construction Companies in North Central Nigeria

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Abstract : The overarching need for the project costs to be controlled to a tolerable, minimum and acceptable level cannot waver as it has attendant consequences on the outcomes of construction projects. This study investigates the impact of Project Cost Control (PCC), evaluate the impact of Cost Variance Analysis (CVA) and assess the impact of Earned Value Analysis (EVA) on the Return on Assets (ROA) and Return on Equity (ROE) of selected construction companies in North Central Nigeria. 102 semi-structured questionnaires were distributed to the construction professionals in the considered construction firms in North-Central Nigeria of which all were properly filled and returned representing a response rate of 100 percent. The analytical method employed includes descriptive of mean and frequency while the inferential statistics of multi variate linear regression analysis was equally adopted. The results show that there is a significance level for the relationship between PCC and return on asset and return on equity which are 0.021 and 0.032 respectively. For the CVA, multivariate regression analysis has shown that the CVA is statistically significant in relation to the return on asset (0.024) and return on equity (0.037) of the selected construction companies in North Central Nigeria. For EVA, the multivariate regression indicates that earned value analysis is statistically significant in relation to return on asset (0.042) and return on equity (0.013). This study thus, concluded that there has been a significant impact of project cost control, cost variance analysis and earned value analysis on the construction project performances of the selected construction organizations in the North-Central region of Nigeria. This study recommended the need for the construction organizations to ascertain the factors contributing to the cost changes. These factors encompass unexpected occurrences, alterations in the project's extent, inaccurate predictions, or insufficient preparation of which identifying their fundamental causes assists the organizations in formulating a strategic plan to effectively tackle them.

Keywords: Construction Companies, Cost Variance Analysis (CVA), Earned Value Analysis (EVA), North-Central Nigeria, Project Cost Control (PCC), Return on Assets (ROA), Return on Equity (ROE)

1.0 Introduction

Construction industries worldwide are marked by constant change and several uncertainties, which pose challenges to achieving effective cost control and management. Consequently, this often leads to subpar cost performance (Sinesilassie et al., 2018). Many construction projects fail due to the overwhelming demand on designers to maximize value in terms of time, cost constraints, and quality. The current economic slump in the country is primarily attributed to historical mismanagement of resources, resulting in resource scarcity and rising inflation. This necessitates focused endeavors aimed at preventing projects from beyond budgetary limits (Yismalet& Alemu, 2018). Cost control refers to the management of project costs in construction through the use of scientifically validated instruments and methodologies. This scenario guarantees that a contractor can derive financial gain from carrying out the job. Ogungbe (2021), asserts that every project, regardless of its scale or nature, is planned and designed with the purpose of achieving a specific objective. In order for it to achieve success, careful planning is essential. A project's success can be evaluated based on several criteria, including timeliness, cost efficiency, project efficacy, quality, and client satisfaction. However, it is important to note that the definition of project success is subjective, since each stakeholder may have their own interpretation of what constitutes success. Successes and failures are subjective and dependent on individual perspectives (Sinesilassie et al., 2018). Cost performance refers to the degree to which the ultimate cost of a project aligns with its initial anticipated cost, which was determined during the project's design phase. Within the construction sector, the primary aim of most clients is to obtain facilities and projects that align with their expectations. This typically entails ensuring that the work is finished within the specified timeframe, budget, and scope, while also maintaining high quality standards. Construction professionals, including builders, architects, quantity surveyors, engineers, and project managers, are now faced with a new and intricate responsibility (Kumar and Yadav, 2015). In addition, the project cost management processes have become more intricate due to the implementation of innovative procurement methods, construction technologies, material and equipment resources, and experts in new and diverse disciplines. Project execution requires a significant amount of resources. If these resources are lost due to project failure or abandonment, it can greatly impact the ability of investors and financiers to provide funding for future projects. Effective cost control and management are of utmost importance (Ogungbe, 2021). Estimated expense: Contractors are obligated to complete the project according to predetermined goals.

Project Cost Control is essential in construction project management to ensure that projects are completed within the allocated budget and timetable. Nevertheless, the construction industry in Nigeria is now in the process of developing cost management

techniques, which has resulted in project delays, cost overruns, and subpar outputs. Hence, it is imperative to establish efficient project cost management strategies to ensure the long-term development of Nigeria's construction industry. This paper examines the difficulties encountered in managing project expenses in the construction sector of Nigeria and suggests potential remedies. The significance of project cost control in the Nigerian construction industry has constantly been disregarded. Effectively managing project expenses is essential in order to avoid excessive capital outlay, which may result in project termination during implementation. Thoroughly analyzing the expenses of any project, from beginning to end, is crucial in order to prevent unforeseen costs that may impede the successful completion of the project. Cost control include the vigilant oversight of expenses, the tracking of project advancement, and the management of time. If the cumulative expense of a project at a specific stage above the predetermined cost benchmark, it is imperative to implement effective cost management tactics. These tactics may involve informing stakeholders about possible increases in costs or ensuring that only actions directly linked to the project scope are performed. Project managers are required to swiftly identify and disclose any issues related to professionalism and ethics. In order to attain their financial objectives and minimize expenses, both publicly and privately owned companies must successfully execute projects within the allocated budget and specified timeframe (Ogunmakinde et al., 2019). Project managers can guarantee this by employing efficient cost-control strategies. Companies can mitigate risks and fully capitalize on project completion by using effective project cost management (Ebekozien, 2020). Egwunatum et al. (2022) state that controlling expenses entails adhering to a budget that is established on the basis of cost forecasts. The forecasts are derived from two primary components: the scope of work and the cost associated with each completed activity. In order to accomplish this, the requirements of the project are clearly defined in the plan, which is subsequently converted into specific activities. Each and every activity necessitates the presence of individuals, resources, and equipment. Estimating the cost entails utilizing data from previous projects, bids, industry standards, and historical expenses as an initial reference. After the project scope is established, each activity is analyzed to determine its individual cost components.

Odeyinka and Yusif (2019) documented a substantial surge in construction operations within Nigeria's construction sector. The rise in expenses for the project can be ascribed to a variety of things. Some factors contributing to this issue include inefficient cost management procedures, insufficient planning, and instances of corruption. The construction industry in Nigeria has seen substantial challenges, including cost overruns, delays, subpar performance, heightened waste, and discontented stakeholders. These issues have hindered the long-term development in the industry. The lack of effective

project cost control systems is acknowledged as one of the main reasons for these problems. Regrettably, Nigeria's implementation of best practices for project cost control is restricted, exacerbating the situation as a result of corruption, inadequate planning, and a shortage of competent personnel. Hence, it is imperative to examine the challenges faced by project managers while implementing effective cost control measures in the Nigerian construction sector. This will assist in devising tactics to surmount these challenges. The escalating proliferation of initiated projects is a major source of apprehension among stakeholders, as they are frequently abandoned or left unfinished by individuals, enterprises, and even governmental entities. The significant rate of abandonment has had a detrimental impact on our infrastructure development and may have discouraged potential investors from investing in our economy (Omopariola et al., 2020). The construction industry has a substantial impact on the expansion and progress of the Nigerian economy. Nevertheless, the project has encountered obstacles such as excessive expenses, delays, and substandard craftsmanship, which have had an adverse effect on its long-term viability. The importance of efficient project cost management in enhancing industrial performance and ensuring sustained success is well acknowledged. Hence, the purpose of this study is to examine the obstacles faced by project managers while implementing effective project cost management procedures and propose suggestions for overcoming these difficulties. The significance of this study lies in its ability to contribute to the sustainable expansion of the construction industry in Nigeria and inform the formulation of policies and strategies that promote the sector's development and growth. It achieves this by identifying the challenges and opportunities for enhancing project cost management techniques. The findings of this research could be beneficial to other developing nations facing similar challenges in managing project costs in the construction industry (Ogunmakinde et al., 2019).

1.1 Objectives of the Study

i. To investigate the impact of Project Cost Control (PCC) on the Return on Assets (ROA) and Return on Equity (ROE) of selected construction companies in North Central Nigeria.
ii. To evaluate the impact of Cost Variance Analysis (CVA) on the Return on Assets (ROA) and Return on Equity (ROE) of selected construction companies in North Central Nigeria.
iii. To assess the impact of Earned Value Analysis (EVA) on the Return on Assets (ROA) and Return on Equity (ROE) of selected construction companies in North Central Nigeria.

1.2 Hypotheses of the Study

H_{01}:There is no significant statisticalimpact of PCC on the ROA and ROE of selected construction companies in North Central Nigeria

H_{02}:There is no significant statisticalimpact of CVA on the ROA and ROE of selected construction companies in North Central Nigeria.
H_{03}:There is no significant statisticalimpact of EVA on the ROA and ROE of selected construction companies in North Central Nigeria.

2.0 Literature Review

2.1 Project Cost Control

Project cost is the sum of all expenditures associated with the execution of a certain project. It encompasses all the expenses related to the process of strategizing, conceptualizing, executing, and finalizing the project. Project costs often encompass direct expenses such as wages, supplies, machinery, and fees paid to subcontractors, along with indirect charges like overhead costs, administrative expenditures, and cash set aside for unforeseen circumstances. Precisely assessing and overseeing project expenses are essential for guaranteeing the project's fiscal sustainability and triumphant culmination (Ali et al., 2021). Also, lifecycle costscontain expendituresthat cover all aspects of a project's lifespan, including planning, design, construction, operation, and maintenance. Lifecycle costs encompass not only the initial capital outlay but also the recurring expenditures necessary to maintain the project's functionality. According to Abdullahi and Anifowose (2019), project cost refers to the whole amount of money or financial resources needed to carry out and finish a construction or infrastructure project. The cost estimation encompasses a range of elements, including material charges, labor expenses, equipment expenses, overhead costs, and any additional expenses related to the project. The article examines the elements that can contribute to cost overruns in construction projects and investigates strategies to manage and reduce these overruns. Project cost control refers to the use of procedures and strategies to effectively manage and regulate the expenses related to a project, guaranteeing that it remains within the predetermined budget (Kurniawan et al., 2021). The primary goal of project cost control is to oversee, assess, and modify financial elements during the project's lifespan in order to avoid exceeding the budget and ensure that expenses are in line with the intended budget (Kachana& Ramesh, 2019). Through the use of efficient project cost management procedures, project managers can improve the clarity of financial information, make well-informed choices, and ensure the project's financial stability, ultimately leading to successful project completion within the specified budgetary limits.In order to efficiently manage project expenses, it is crucial to start by doing thorough estimation and creating a practical budget that is in line with the project's objectives. Deploy a system for ongoing surveillance, perform analysis of deviations, and enforce protocols for managing modifications. Take proactive measures to control hazards, ensure the accuracy of records, and regularly deliver clear and open reports to stakeholders. Provide training to

the project team on cost management, with the aim of promoting understanding and responsibility. Aim for ongoing enhancement by evaluating and perfecting cost control procedures in accordance with acquired knowledge. This holistic approach guarantees financial prosperity and mitigates the likelihood of exceeding the budget at any stage of the project's lifespan (Khaleel & Naimi, 2022). Hence, it is imperative to carry out additional investigation on the matter. This study investigates project cost control through the investigation of cost variance, earned value, cost valuation reconciliation, and schedule management.

2.2 Cost Variance Analysis (CVA)

CVA is a vital method employed to evaluate the disparity between estimated or assigned expenses and the real costs accrued throughout a project or commercial undertaking. This analytical approach facilitates businesses in comprehending and overseeing the financial performance of their projects or operations by juxtaposing the projected costs with the factual expenditures (Kaming et al., 2022). Through consistent utilization of cost variance analysis, organizations can detect excessive expenditures or possible cost reductions, enabling them to undertake corrective actions to assure adherence to project or operational requirements. This study is extremely helpful in financial management as it boosts the accuracy of budgeting, improves the allocation of resources, and optimizes overall cost efficiency. Cost Variance Analysis (CVA) is an essential technique for project managers to evaluate, understand, and control project expenses. It facilitates proactive decision-making, promotes responsibility, and enhances the overall success of the project. The Cost Variance (CV) is the numerical discrepancy between the Earned Value (EV) and the Actual Cost (AC) of completed work (Legesse, 2019). The equation for calculating the coefficient of variation (CV) is CV = EV - AC. A positive CV signifies a reduction in costs, whilst a negative CV implies an increase in costs. The Cost Performance Index (CPI) is a quantitative tool that assesses the effectiveness of cost allocation in a project. The Consumer Price Index (CPI) is determined by dividing the Earned Value (EV) by the Actual Cost (AC). If the CPI is larger than 1, it means that the cost performance is favorable. On the other hand, if the CPI is less than 1, it shows that there are cost overruns. A positive CV shows that the project is operating within the allocated budget, whereas a negative CV suggests that the project is beyond the budget. A CPI with a value more than 1 indicates cost efficiency, whereas a CPI with a value less than 1 indicates inefficiency (Liang et al., 2020). Multiple variables might lead to discrepancies, including imprecise cost estimation, alterations in project scope, unforeseen resource expenses, or inefficiencies in project implementation (Le &Sutrisna, 2023). Identifying the fundamental causes is essential for implementing effective measures to fix the issue. By analyzing cost variances, project managers can identify

deviations from the planned budget and take appropriate corrective measures to realign the project with its original trajectory. These steps may involve modifying resource allocations, reevaluating contracts, or amending project timelines (Kermanshachi, S., &Pamidimukkala, 2023).

2.3 Earned Value Analysis (EVA)

EVA is a holistic project management methodology that combines cost, time, and scope measurements to evaluate project effectiveness (Msiska et al., 2022). The calculation of performance indices, such as the CPI and Schedule Performance Index (SPI), is based on key parameters like Planned Value (PV), Earned Value (EV), and Actual Cost (AC) (McConnell & Quinn, 2021). These measures enable the investigation of differences, with Cost Variance (CV) suggesting cost savings and scheduling Variance (SV) indicating scheduling efficiency. EVA facilitates the prediction of the projected cost and duration at the end of a project, enabling proactive management and clear communication with stakeholders using measurable measures. Although EVA has advantages, it also has limits. One disadvantage is its dependence on the premise that the original project plan is still applicable. Another limitation is its sensitivity to the accuracy of initial predictions (Maaroof& Naimi, 2023). Practically, EVA is incorporated into project management software to enable live monitoring and examination. By offering a comprehensive assessment of project well-being, EVA enables project managers to make well-informed choices, detect possible problems at an early stage, and guarantee successful project completion while adhering to predetermined limitations in terms of scope, time, and money (Nadir & Ahmed, 2020). According to Nnadi et al. (2020), EVA has been found to strongly enhance the financial performance of organizations. EVA enables the systematic management of project costs and efficiency by offering a comprehensive structure. It facilitates the continuous monitoring of cost and schedule deviations through the use of measures such as the Cost Performance Index (CPI) and Schedule Performance Index (SPI). Positive variances enhance profitability and promote financial discipline. In addition, EVA's forecasting abilities for estimating cost and time at completion provide for proactive risk management, protecting against unexpected financial setbacks (Nor et al., 2022). Furthermore, the clear and open communication of the project's status and effective allocation of resources enhance the trust of stakeholders, ultimately leading to a beneficial impact on stock prices and recruiting investment. The support provided by EVA in strategic decision-making and its promotion of operational efficiency help to ensure that projects are in line with organizational goals, so contributing to the long-term financial sustainability and success of the organization. To summarize, EVA (Economic Value Added) is a highly beneficial instrument for enterprises that operate on project-

based models. It has the potential to generate favorable financial results and guarantee efficient financial management (Pandowo et al., 2022).

2.4 Financial Performance

Financial performance assesses the effectiveness of a business in utilizing its resources to create revenue (Apochi et al., 2022; Salleh, 2023). Every business, including banks, strives to optimize its profitability. The banking sector's robust financial performance enables it to resist unfavorable shocks, contributes to the stability of the financial system, and provides shareholders with satisfactory returns on their investment (Salleh, 2023). A bank's strong profitability indicates its effective management of revenues, assets, and investments in its operational activities, resulting in financial benefit. Assessing financial performance is crucial in the field of financial management. Financial performance indexes are independent and unbiased with respect to the unit of analysis. The indexes rigorously assess several performance aspects and externally verify their accuracy (Imeokparia et al., 2021). Financial performance indicators can be categorized into various groups, including accounting metrics, market metrics, growth metrics, hybrid accounting metrics, business survival metrics, and operational measures (Dhamotharan et al., 2020). The financial statements, which represent the company's financial status, are created in accordance with the company's accounting rules (Mehmood & De Luca, 2023).

Academics employ accounting standards due to their numerous benefits. Initially, these indices are the most readily accessible gauge of a company's financial performance (Adeghe et al., 2019). Furthermore, the research indicates a strong correlation between a company's accounting performance and its crucial economic returns (Cho et al., 2019). Furthermore, the accounting metrics pertain to the factual evaluation of the company's performance, as reported in its statement of financial position (Bekele, 2023). However, experts have recently identified some drawbacks of accounting systems, contrasting with the aforementioned advantages. An inherent drawback of accounting standards is their focus on the historical performance of the organization. Therefore, these indicators provide just a minimal advantage in terms of directly evaluating and analyzing future performance (Prasetiawatia&Sudanab, 2019). Furthermore, when establishing the framework for each company's accounting concept, the implementation of accounting measures enables corporations to strategically influence the returns connected with them. For example, the choice made by a corporation about how to calculate inventories, expenses, or amortization programs has an impact on the corresponding accounting figures and can be compared among other companies (Wally et al., 2023). Due to variations in accounting standards across different nations, it is important to exercise caution when comparing firms' countries using accounting-based indexes (Wang et al.,

2023). Despite the potential drawbacks, accounting-based measurements continue to be the most widely used financial performance indicator across industries. Akotia (2023) indicated in a thorough literature study that accounting measurements make up more than 40% of the company performance indicators used by researchers. Researchers utilize a diverse array of indicators as components of the accounting metrics. In a separate literature review, Ahmeds et al. (2021) identified additional accounting metrics commonly employed by academic researchers to gauge company performance. These metrics include earnings before interest, taxes, depreciation, and amortization (EBITDA), earnings and taxes before interest (EBIT), and return on equity invested. Thus, it was necessary for the researchers to provide information about the comparative utilization of these indicators in the examined regions. Financial performance can be assessed using several metrics such as Return on Assets, Return on Equity, Earnings Per Share, Return on Sales, Return on Investment, Tobin Q, and Debt-to-Equity Ratio.

2.4.1 Return on Assets (ROA)

ROA is a financial metric that quantifies the efficiency of a bank's management in utilizing firm assets to create money (Ummah et al., 2023). Return on assets (ROA) is a quantitative measure that evaluates a company's effectiveness in leveraging its assets to create profits. ROA is a financial metric that measures a company's ability to generate earnings from its investments. It is calculated by dividing the net income by the average total assets. ROA provides vital information about the company's operational efficacy and asset management, giving insights into its operational efficiency and asset utilization. The standardized metric facilitates performance comparison across industries, assisting investors in assessing management effectiveness and identifying areas for potential improvement in asset deployment to enhance overall profitability (Teshome et al., 2018).

2.4.2 Return on Equity (ROE)

ROA is a financial measure that assesses a company's performance in relation to its shareholders' equity (Ummah et al., 2023). ROE quantifies the effectiveness of using equity capital to create returns by dividing net income by the average shareholder's equity. The purpose of this statistic is to evaluate management's capacity to generate profits for shareholders. It serves as a standardized measure for comparing different companies and assists investors in assessing the company's financial performance and potential for growth (Ummah et al., 2023). Return on equity (ROE) is a vital metric used to assess how effectively equity is utilized to achieve the best possible financial outcomes.

2.5 Theoretical Review

2.5.1 Resource-Based View (RBV)

The RBV theory was first formulated by Birger Wernerfelt in his 1984 work entitled "A RBV of the Firm," which was published in the "Strategic Management Journal." The RBV is a management paradigm that highlights the significance of a firm's internal resources and competencies as essential elements for achieving a competitive advantage (Efebeli, 2021). The focus is on distinctive and valuable resources that are challenging to replicate, serving as the foundation for long-term success. RBV emphasizes the significance of dynamic capabilities in order to adjust and respond effectively to evolving surroundings. The appropriate allocation of resources leads to a firm's diversity and variations in performance. This theory provides guidance for strategic decision-making by promoting investments in unique resources that are in line with long-term objectives. The RBV framework directs focus away from external issues and towards internal capabilities, offering valuable insights into the reasons for the constant outperformance of select organizations in the ever-changing business environment (Ellis et al., 2021). RBV posits that a company's abilities and resources have a substantial impact on its financial performance and competitive edge (Lutfi et al., 2023). According to Shaharudin et al. (2023), project cost control is a valuable tool for construction organizations to reduce expenses, minimize waste, and optimize resource allocation. Construction firms can achieve a competitive edge by using effective cost management measures, leading to improved financial performance (Cooper et al., 2023). The Resource-Based View (RBV) philosophy places significant importance on utilizing internal resources to achieve a lasting competitive advantage. It emphasizes the adoption of long-term strategies and the development of dynamic capabilities. The main advantages of this approach are its ability to emphasize the diversity of resources and provide insights into variances in performance. Nevertheless, RBV exhibits certain limitations, including a deficiency in prioritizing external factors, challenges in identifying critical resources, inadequate guidance on executing strategies, and an assumption that resources can be easily replicated. Although RBV provides vital insights into internal capabilities, it may not offer a full framework for efficiently addressing external issues and implementing initiatives.

2.5.2 Contingency Theory (CT)

The theory of organizational contingency, sometimes known as situational theory, was initially proposed by British sociologist Joan Woodward in the late 1950s. Woodward's research focused on the correlation between organizational structure and technology, specifically inside industrial firms. She conducted empirical research studies examining the impact of different manufacturing technologies on the design and functionality of organizations. The CT asserts that the effectiveness of cost management techniques in

building projects is determined on the specific context and conditions. The impact of project cost control on financial success may vary depending on factors such as project size, complexity, and contractual terms (Harney, 2023). The focal point of this strategy lies in the necessity of tailoring cost management processes to suit the specific requirements of individual projects (Yang & Jiang, 2023). Construction firms can enhance their financial performance by aligning their procedures with project-specific requirements through the implementation of contingency-based cost control solutions. Through the examination and application of these theories, researchers and professionals in the construction industry can gain a deeper comprehension of the impact of project cost management on financial performance. By utilizing this information, Nigerian construction companies can develop and implement effective cost management strategies, leading to improved financial results (Bhatia & Kumar, 2023).

Continuous improvement, a famous strategy in organizational management, possesses significant advantages and disadvantages. One of its strengths is its ability to acknowledge and understand the complex relationship between organizational structures and external environmental influences. This acknowledgement enables a versatile and adaptable management strategy that may be customized to suit individual conditions. The emphasis of contingency theory on situational awareness and reactivity is especially helpful in intricate and swiftly evolving contexts (Hammed et al., 2022). Nevertheless, the idea also possesses its limitations. The difficulty lies in precisely identifying and considering all pertinent variables. The numerous potential elements and their interactions might form an intricate network, posing challenges in developing a universally applicable solution (Hasan et al., 2021). The intricate nature of contingency theory presents obstacles in its practical application, necessitating a comprehensive comprehension of the unique situation and adeptness in navigating complex interactions between variables. Furthermore, CT lacks explicit instructions on how to prioritize or evaluate various contingencies, allowing for interpretation and subjectivity (Herzanita et al., 2019). The theory's lack of definition could impede its efficacy in offering precise and practical insights for businesses aiming to adopt it.

3.0 Research Methodology

3.1 Research Design

This study will utilize a cross-sectional survey research design. This design is chosen because the study requires gathering information through a structured questionnaire that will be given to the managers or CEOs of selected construction companies in North Central Nigeria. The cross-sectional survey research design is chosen because it effectively describes the characteristics of a large population across various geographical locations.

This method offers a wide scope and allows for a more precise sample, ensuring accurate results for drawing conclusions and making important decisions. The cross-sectional survey research design enables respondents to provide more candid and valid answers by ensuring anonymity. This design allows for more honest and unambiguous responses compared to other research methods, particularly when it is explicitly stated that survey answers will be kept completely confidential.

3.2 Population of the Study

The study would include a population consisting of specifically chosen construction enterprises in North Central Nigeria. The demographics referred to are individuals who have positions of authority and leadership within the construction industry, specifically encompassing those in roles such as heads of strategy and planning, general managers, marketing managers, sales managers, and finance managers. The researcher employed a stratified sampling approach to select 20 organizations that effectively represented the full target group (Lewi et al., 2015), and the population giving the managerial levels in the Department is as follows:

Table 1: Selected Construction Companies in North Central, Nigeria

Names of construction companies	**STATE**	**Managers/CEOs**
AG Vison Construction Nig. Ltd	Kogi	12
Dantata&Sawoe Construction Company Nig. Ltd	Kwara	10
Ceezali Nig. Ltd	Niger	16
Dumez Nig. Ltd.	Benue	11
Kadeyprime Group Ltd.	Plateau	12
Kingfem Nig. Ltd	Nasarawa	19
Kouris Construction Nig. Ltd.	Abuja	22
Total		**102**

Source: Researchers Computation, (2023)

3.3 Sampling Techniques and Sample Size

The study will employ both purposive and census sampling techniques. The census sampling technique is employed due to the small size of the population and the constant accessibility of the MDs/CEOs.Thus, the total population of the general managers, marketing managers, sales managers, and finance managers of AG Vison Construction Nig. Ltd, Dantata&Sawoe Construction Company Nig. Ltd, Ceezali Nig. Ltd, Dumez Nig. Ltd, Kadeyprime Group Ltd, Kingfem Nig. Ltd, Kouris Construction Nig. Ltd.in the

construction companies is not up to four hundred therefore, the study will not employ any formula to reduce the population. The entire 102 MDs/CEOs will be issued questionnaire.

3.4 Method of Data Collection and Analysis

The data collection approach employed in this study is the administration of a questionnaire to the respondents, specifically MDs and CEOs. This method involves the gathering of primary data. The utilization of primary sources of data is essential for presenting a study of this kind and other research data that is derived from original data generated by the individuals directly involved in the research topic area (Bryman, 2015). Furthermore, questionnaires are a feasible method for gathering substantial volumes of information from a significant number of respondents within a brief timeframe, and they are relatively cost-effective (Hennick et al., 2020). The study employed the multiple regression approach. The purpose of utilizing regression is to determine the causal relationship between the dependent variables and independent factors. The study will additionally include t-test and f-test methodologies. The t-test is employed to determine the statistical significance of independent factors on the dependent variables. The f-test is employed to assess the adequacy of a model or to identify the overall significance of the model. The dependent variable is assessed through the efficacy of selected construction businesses in North Central Nigeria after implementing project cost control measures. It is worthy to note that the study adopted the model of Morgan et al. (2017), with a slight modification to suit the adaptation of this study. The mathematical method or model is expressed in the study as follows:

$Y = f(X1,X2,\ldots\ldots\ldots\ldots Xn)$ ..... equation (1)

$Y_1 = \beta o + \beta_1 X_1 + \beta_2 X_2 + \ldots\ldots\ldots\ldots Xn\ldots\ldots\ldots$ equation (2)

$Y_2 = \beta o + \beta_1 X_1 + \beta_2 X_2 + \ldots\ldots\ldots\ldots Xn\ldots\ldots\ldots$ equation (3)

Where:

Y = Dependent Variable of the study

X1.....Xn = Independent variable of the study

Substituting the variable of this current study into equation 1 above, we have:

ROA = f (PCC, CVA, EAA,) ..... (4)

ROE = f (PCC, CVA, EAA,) ..... (5)

Where:

ROA = Return on Asset

ROE = Return on Equity

PCC = Project Cost Control

CVA = Cost Variance Analysis

EAA = Earned Value Analysis

ß = Independent variable

α = Intercept

ε = Error terms

The model can be expressed mathematically as:

$ROA = \beta_0 + \beta_1 PCC + \beta_2 CVA + \beta_3 EAA + \varepsilon$ ..... (5)

$ROE = \beta_0 + \beta_1 PCC + \beta_2 CVA + \beta_3 EAA + \varepsilon$ ..... (6)

A regression model will be stated in terms of a connection between the predictors and independent variables, X and the response (Performance of construction companies) Y

3.5 Reliability of Instrument

The questionnaire was evaluated to determine its reliability. The questionnaire's reliability should exceed the minimum Alpha value of 0.6, as stated by Berg and Howard (2017). The questionnaires were subjected to testing to verify the accuracy of the responses, and the table below displays the reliability values of the variables. All variables included in this study will have a score higher than the Alpha value of 0.6. Each variable achieved a score ranging from 0.73 or 73% to 0.84 or 84%, which was the predetermined threshold.

Table 2: Scale Reliability of Variables

Variables	Cronbach's Alpha
PCC	0.72
CVA	0.77
EAA	0.81
ROA	0.76
ROE	0.71

Source: Survey Questionnaire, (2024)

4.0 Analysis and Results

4.1 Background Information of Respondents

In line with the outcome of table 3 showing the profile of the respondents, the gender of the respondents entails 83 males and 19 females delineating a response rate of 81 and 19 percent respectively. This means that the male gender dominates the Nigerian construction sector reason of which is not unconnected to the muscular and strenuous nature of the construction jobs (Muhammed et al., 2022a). The age of the respondents encompasses 25 – 35 years (15), 26 – 45 years (50), 46 – 55 years (30), and 56 & above years (7) depicting a response rate of 15, 49, 29 and 7 percent correspondingly. Also, academic

qualification includes BSc/HND (10), MSc/MBA (72) and DBA/PhD (20) representing a response rate of 9, 71, and 20 percent congruently. Furthermore, the participating construction companies includes AG Vision Construction Nig. Ltd (12), Dantata&Sawoe Construction Company Nig. Ltd (10), Ceezali Nig. Ltd (16), Dumez Nig. Ltd. (11), Kadeyprime Group Ltd. (12), Kingfem Nig. Ltd (19) and Kouris Construction Nig. Ltd (22) which represents a response rate of 12, 10, 16, 11, 12, 18 and 21 consistently.

Table 3: Profile of the Respondents

Variables	**Frequency**	**Percentage**
Gender of the Respondents		
Male	83	81
Female	19	19
Total	102	100
Ageof the Respondents		
25-35 years	15	15
36-45 years	50	49
46-55 years	30	29
56 & above	7	7
Total	102	100
Academic Qualification		
BSc/HND	10	9
MSc/MBA	72	71
DBA/PhD	20	20
Total	102	100
Participating Construction Companies		
AG Vision Construction Nig. Ltd	12	12
Dantata&Sawoe Construction Company Nig. Ltd	10	10
Ceezali Nig. Ltd	16	16
Dumez Nig. Ltd.	11	11
Kadeyprime Group Ltd.	12	12
Kingfem Nig. Ltd	19	18
Kouris Construction Nig. Ltd.	22	21
Total	102	100

Source: Survey Questionnaire, (2024)

4.2 Descriptive Statistics

4.2.1 Missing Data

Table 4 checks if there is any missing data in the computation made. Cross-sectional data were collected from 102 observations drawn from seven construction companies in the North Central region of Nigeria, and interestingly, there was no missing data. This reveals that the data used in the models are complete.

Table 4: Test for Missing Data

	Valid		Missing		Cases Total	
	N	Percent	N	Percent	N	Percent
Cost Variance Analysis	102	100.0%	0	0.0%	102	100.0%
Earned Value Analysis	102	100.0%	0	0.0%	102	100.0%
Project Cost Control	102	100.0%	0	0.0%	102	100.0%

Source: Survey Questionnaire, (2024)

4.2.2 Test for Data Normality

The purpose of Table 5 is to assess the normalcy of the data utilized in this investigation. The population mean of PCC is 4.18, the population mean of CVA is 3.71, and the population mean of EVA is 3.96. The standard deviation of the three variables indicates that the data is centered around the population mean. Specifically, the standard deviations are 2.863 for project cost control, 2.348 for cost variance analysis, and 1.937 for earned value analysis. Therefore, the small standard error of the mean indicates that the average values of the five variables accurately reflect the characteristics of the population under investigation (Saunders et al., 2023). To determine the genuine normality of the data, statistical tests such as the Kolmogorov-Smirnov and Shapiro-Wilk tests were conducted, with a significance level of 0.05. The objective of these tests is to ascertain whether the data deviate significantly from the normal distribution. A value greater than 0.05 indicates that there is no statistically significant difference from the normal distribution (Saunders et al., 2023). Therefore, according to the normality table, the Kolmogorov-Smirnov test has shown that the PCC is 0.211, the CVA is 0.302, and the EVA is 0.151. In addition, the Shapiro-Wilk test has determined that the PCC value is 0.342, the CVA value is 0.401, and the EVA value is 0.275. Given that all of these numbers exceed 0.05, we can infer that the data follows a normal distribution, as there is no significant statistical difference from the normal distribution.

Table 5: Test for Data Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	Df	Sig.
PCC	.319	102	.211	.679	102	.342
CVA	.321	102	.302	.637	102	.401
EVA	.284	102	.151	.684	102	.275

Source: Survey Questionnaire, (2024)

4.2.3 PCC

Table 6 presents the analysis of data collected from respondents regarding whether project costs are monitored and adjusted during the project lifecycle in their company. Out of the total respondents, 66 (64.7%) strongly believed it to be true, 14 (13.7%) believed it to be true, 3 (2.9%) were neutral, 12 (11.8%) believed it to be untrue, and 7 (6.9%) strongly believed it to be untrue. The investigation has shown that the organizations polled are actively monitoring and making adjustments to the project cost throughout the project lifespan. In response to a question regarding the existence of a baseline for project budget in their company, 59 respondents, accounting for 57.8% of the total, strongly affirmed its presence. Additionally, 21 respondents, representing 20.6%, believed it to be true. Only 2 respondents, making up 2% of the total, were unsure whether it was true or untrue. Conversely, 16 respondents, comprising 15.7%, believed it to be untrue. Lastly, 3 respondents, representing 3.9%, strongly believed it to be untrue. This result has verified the existence of a fundamental level for project budget in the surveyed organizations. In regards to the question of whether invoices and payments are verified during project execution in their company, the survey results indicate that 81 respondents, accounting for 79.4% of the total, strongly believed it to be true. Additionally, 9 respondents, representing 8.8%, believed it to be true. On the other hand, 4 respondents, or 3.9%, were neutral and neither considered it true nor untrue. Another 4 respondents, also representing 3.9%, believed it to be untrue, while an equal number of 4 respondents, accounting for 3.9%, strongly believed it to be untrue. The results of this study have also demonstrated that the organizations polled verify invoices and payments during project execution. The results of this section have reinforced the research conducted by Anyanwu (2024), which concluded that the implementation of efficient project cost control enables project managers to achieve financial transparency, make well-informed decisions, and sustain the financial well-being of their projects. Ultimately, this leads to successful project delivery within the specified budgetary limitations.

Table 6: PCC for the Variables

		Frequency	Percent	Valid Percent	Cumulative Percent
Project cost is monitored and adjusted during your project lifecycle					
Valid	Strongly True	66	64.7	64.7	64.7
	True	14	13.7	13.7	78.4
	Neither true nor untrue	3	2.9	2.9	81.4
	Untrue	12	11.8	11.8	93.1
	Strongly Untrue	7	6.9	6.9	100.0
	Total	102	100.0	100.0	
There is baseline for project budgets in your company					
Valid	Strongly True	59	57.8	57.8	57.8
	True	21	20.6	20.6	78.4
	Neither true nor untrue	2	2.0	2.0	80.4
	Untrue	16	15.7	15.7	96.1
	Strongly Untrue	4	3.9	3.9	100.0
	Total	102	100.0	100.0	
Invoices and payments are verified during project execution in your company					
Valid	Strongly True	81	79.4	79.4	79.4
	True	9	8.8	8.8	88.2
	Neither true nor untrue	4	3.9	3.9	92.2
	Untrue	4	3.9	3.9	96.1
	Strongly Untrue	4	3.9	3.9	100.0
	Total	102	100.0	100.0	

Source: Survey Questionnaire, (2024)

4.2.4CVA

Table 7 presents an analysis of the data collected from the respondents. They were asked whether their company assesses the difference between budgeted cost and actual cost of projects. Out of the 102 respondents, 89 (87.3%) strongly believed it to be true, 6 (5.9%) believed it to be true, 1 (1%) had no opinion, 3 (2.9%) believed it to be untrue, and 3

(2.9%) strongly believed it to be untrue. The results have verified that the companies surveyed evaluate the discrepancy between the projected cost and the actual cost of projects. The respondents were asked whether cost engineers in their company always investigate the causes of cost variation. Out of the 102 total respondents, 62 (60.8%) strongly believed it to be true, 21 (20.6%) believed it to be true, 3 (2.9%) were neutral, 11 (10.8%) believed it to be untrue, and 5 (4.9%) strongly believed it to be untrue. This result has also verified that the cost engineers consistently examine the factors contributing to cost fluctuations in the surveyed organizations. The survey asked whether cost engineers consistently take corrective actions when there are variations in project costs. Out of the 50 respondents, 49% strongly agreed, while 32.4% agreed. Only 2% were neutral, 10.8% disagreed, and 5.9% strongly disagreed. This discovery has also verified that the cost engineers consistently implement remedial measures in response to cost fluctuations in the surveyed organizations. The results of this section align with the research conducted by Chicoca and Utomo (2019), which examined the importance of cost drivers on project cost performance. Their study revealed that project managers should not only take into account historical cost data, but also anticipate future revenues, future costs, and potential technical issues in order to make informed decisions. The study highlighted the significance of recognizing cost variances and investigating cost-saving possibilities. This approach can assist project managers in effectively overseeing project expenses and appropriately allocating contingency reserves.

Table 7: CVA for the Variables

		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Is the difference between budgeted cost and actual cost of projects is assessed in your company					
Valid	Strongly True	89	87.3	87.3	87.3
	True	6	5.9	5.9	93.1
	Neither true nor untrue	1	1.0	1.0	94.1
	Untrue	3	2.9	2.9	97.1
	Strongly Untrue	3	2.9	2.9	100.0
	Total	102	100.0	100.0	
Cost Engineers always investigate the causes of cost variation in your company					
Valid	Strongly True	62	60.8	60.8	60.8
	True	21	20.6	20.6	81.4
	Neither true nor untrue	3	2.9	2.9	84.3

	Untrue	11	10.8	10.8	95.1
	Strongly Untrue	5	4.9	4.9	100.0
	Total	102	100.0	100.0	
Cost Engineers always take corrective actions in case of cost variation in your company					
Valid	Strongly True	50	49.0	49.0	49.0
	True	33	32.4	32.4	81.4
	Neither true nor untrue	2	2.0	2.0	83.3
	Untrue	11	10.8	10.8	94.1
	Strongly Untrue	6	5.9	5.9	100.0
	Total	102	100.0	100.0	

Source: Survey Questionnaire, (2024)

2.2.4EVA

Table 8 displays the results of a survey where respondents were asked if the managers of their company evaluate the future performance of projects during execution. Out of the 102 respondents, 67 (65.7%) strongly agreed, 12 (11.8%) agreed, 2 (2%) were neutral, 13 (12.7%) disagreed, and 8 (7.8%) strongly disagreed. This discovery has unveiled that the management of the surveyed organizations consistently evaluate the prospective performance of their projects. The survey also inquired about whether managers in the organization conduct risk assessment analysis during project execution. Of the respondents, 48 (47.1%) strongly agreed, 37 (36.3%) agreed, 5 (4.9%) had no opinion, 8 (7.8%) disagreed, and 4 (3.9%) strongly disagreed. The discovery has unveiled that the management of the surveyed organizations engage in risk assessment analysis when carrying out projects. The respondents were asked whether the managers in their organization design risk mitigation strategies for projects. 48 respondents (47.1%) strongly believed this to be untrue, 19 respondents (18.6%) believed it to be untrue, 7 respondents (6.9%) were unsure, 20 respondents (19.6%) believed it to be true, and 8 respondents (7.8%) strongly believed it to be true. The finding has uncovered that the managers of the examined organizations do not formulate risk mitigation strategies for their projects.

Table 8: EVA for the Variables

		Frequency	Percent	Valid Percent	Cumulative Percent
Managers assess future performance of projects during execution in your company					
Valid	Strongly True	67	65.7	65.7	65.7
	True	12	11.8	11.8	77.5
	Neither true nor untrue	2	2.0	2.0	79.4
	Untrue	13	12.7	12.7	92.2
	Strongly Untrue	8	7.8	7.8	100.0
	Total	102	100.0	100.0	
Managers perform risk assessment analysis during project execution in your organization					
Valid	Strongly True	48	47.1	47.1	47.1
	True	37	36.3	36.3	83.3
	Neither true nor untrue	5	4.9	4.9	88.2
	Untrue	8	7.8	7.8	96.1
	Strongly Untrue	4	3.9	3.9	100.0
	Total	102	100.0	100.0	
Managers design risk mitigation strategy for projects in their organization					
Valid	Strongly True	8	7.8	7.8	7.8
	True	20	19.6	19.6	27.5
	Neither true nor untrue	7	6.9	6.9	34.3
	Untrue	19	18.6	18.6	52.9
	Strongly Untrue	48	47.1	47.1	100.0
	Total	102	100.0	100.0	

Source: Survey Questionnaire, (2024)

4.2.5 ROA

Table 9 analyzes data from respondents who were asked about their managers' efforts to reduce company costs for increased annual profit. Of the respondents, 62 (60.8%) strongly believed this to be true, 27 (26.5%) believed it to be true, 2 (2%) were neutral, 5 (4.9%) believed it to be untrue, and 6 (5.9%) strongly believed it to be untrue. This

discovery has revealed that the managers of the examined organizations employ strategies to reduce their company's expenses in order to enhance their annual earnings. The survey asked participants about their managers' utilization of company resources to enhance profitability. Out of the 102 respondents, 42 (41.2%) strongly believed this to be true, 38 (37.3%) believed it to be true, 2 (2%) were neutral, 13 (12.7%) believed it to be untrue, and 7 (6.9%) strongly believed it to be untrue. The findings indicate that the surveyed managers effectively manage their company's resources in order to maximize profitability.

Table 9: ROA for the Variables

		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Your managers minimize your company's cost to increase your annual profit					
Valid	Strongly True	62	60.8	60.8	60.8
	True	27	26.5	26.5	87.3
	Neither true nor untrue	2	2.0	2.0	89.2
	Untrue	5	4.9	4.9	94.1
	Strongly Untrue	6	5.9	5.9	100.0
	Total	102	100.0	100.0	
Your managers handle your company's resources to increase your profit					
Valid	Strongly True	42	41.2	41.2	41.2
	True	38	37.3	37.3	78.4
	Neither true nor untrue	2	2.0	2.0	80.4
	Untrue	13	12.7	12.7	93.1
	Strongly Untrue	7	6.9	6.9	100.0
	Total	102	100.0	100.0	

Source: Survey Questionnaire, (2024)

4.2.6 ROE

Table 10 analyzes the data collected from respondents regarding whether their managers share the key performance index of their company with investors. Out of the total respondents, 71 (69.6%) strongly believed it to be true, 13 (12.7%) believed it to be true, 5 (4.9%) were neutral, 5 (4.9%) believed it to be untrue, and 8 (7.8%) strongly believed it to be untrue. The results of this study have demonstrated that the studied company managers disclose their key performance index to the investors. The survey asked

whether investors in the company receive a record of its financial performance. Out of the 102 respondents, 60 (58.8%) strongly believed this to be true, 12 (11.8%) believed it to be true, 5 (4.9%) were unsure, 14 (13.7%) believed it to be untrue, and 11 (10.8%) strongly believed it to be untrue. This outcome has demonstrated that the investors of the companies assessed have received documentation of exceptional financial success. In addition, a survey asked participants whether their company's investors express dissatisfaction with the company's financial performance. Out of the 102 respondents, 66 (64.7%) strongly disagreed, 13 (12.7%) disagreed, 2 (2%) were neutral, 11 (10.8%) agreed, and 10 (9.8%) strongly agreed. This finding demonstrates that the surveyed companies' investors do not express dissatisfaction with their improved financial performance.

Table 10: ROE for the Variables

		Frequency	Percent	Valid Percent	Cumulative Percent
Managers share key performance index of your company with the investors					
Valid	Strongly True	71	69.6	69.6	69.6
	True	13	12.7	12.7	82.4
	Neither true nor untrue	5	4.9	4.9	87.3
	Untrue	5	4.9	4.9	92.2
	Strongly Untrue	8	7.8	7.8	100.0
	Total	102	100.0	100.0	
Investors receive record of financial performance in your company					
Valid	Strongly True	60	58.8	58.8	58.8
	True	12	11.8	11.8	70.6
	Neither true nor untrue	5	4.9	4.9	75.5
	Untrue	14	13.7	13.7	89.2
	Strongly Untrue	11	10.8	10.8	100.0
	Total	102	100.0	100.0	
Investors complain of poor financial performance in your company					
Valid	Strongly True	10	9.8	9.8	9.8
	True	11	10.8	10.8	20.6
	Neither true nor untrue	2	2.0	2.0	22.5
	Untrue	13	12.7	12.7	35.3
	Strongly Untrue	66	64.7	64.7	100.0
	Total	102	100.0	100.0	

Source: Survey Questionnaire, (2024)

4.3 Multivariate Regression Analysis

H_{01}:There is no significant statisticalimpact of PCC on the ROA and ROE of selected construction companies in North Central Nigeria.

H_{02}: CVA has no significant effect on the ROA and ROE of selected construction companies in North Central Nigeria.

Model 2

H_{03}: EVAhas no significant effect on the ROA and ROE of selected construction companies in North Central Nigeria.

Table 11: Coefficients[a]

Model		**95.0% Confidence Interval for B**	
		Unstandardized Coefficients	**Standardized Coefficients**
1	(Constant)	1.124	4.492
	PCC	.330	.148
	CVA	.263	.369
	EVA	.400	.344
a. Dependent Variables: ROA, ROE			

Source: Survey Questionnaire, (2024)

Table 12: Multivariate Regression Model

Independent Variables	**Dependent Variables**	**Type III Sum of Squares**	**Df**	**Mean Square**	**F test**	**Sig.**
Corrected Model	ROA	284.583[a]	5	56.917	758.542	.000
	ROE	462.904[b]	5	92.581	288.607	.000
Intercept	ROA	.822	1	.822	10.951	.001
	ROE	1.651	1	1.651	5.147	.026
PCC	ROA	.119	1	.119	1.591	.021
	ROE	6.246	1	6.246	19.470	.032
CVA	ROA	1.977	1	1.977	26.352	.024
	ROE	.003	1	.003	.011	.037
EVA	ROA	.983	1	.983	13.102	.042
	ROE	2.067	1	2.067	6.442	.013

Error	ROA	7.203	96	.075		
	ROE	30.795	96	.321		
Total	ROA	1046.750	102			
	ROE	3165.111	102			
Corrected Total	ROA	291.787	101			
	ROE	493.699	101			
a. R Squared = .975 (Adjusted R Squared = .974)						

Source: Survey Questionnaire, (2024)

Model 1:The management of project costs has a significant impact on the ROA and ROE of the construction companies chosen in North Central Nigeria. This conclusion was reached based on the empirical evidence gathered from multiple statistical tests to substantiate this discovery. Initially, during the investigation of the frequency distribution of the project cost control variable, it was discovered that the seven chosen organizations monitor and make adjustments to project costs throughout the project's lifespan. Additionally, they verify invoices and payments during the execution of their projects, as indicated in table 11. The results of this study support Anyanwu (2024) assertion, that implementing efficient project cost control enables project managers to achieve financial transparency, make informed decisions, and maintain the financial health of their projects. This ultimately leads to successful project delivery within the defined budgetary constraints. The multivariate regression analysis indicates that project cost control has a statistically significant impact on the return on asset and return on equity of the selected construction companies in North Central Nigeria. The significance level for this relationship is 0.021 for return on asset and 0.032 for return on equity, as shown in table 12.Construction costs are commonly assessed during the initial stage of project planning and are utilized to establish the total budget for the project (Nnadi et al., 2020). Precise cost estimation is crucial for the success of a construction project, since imprecise estimates can result in exceeding the budget, delays, and ultimately project failure (Abd et al., 2019). In order to efficiently control costs in the construction sector, project managers must diligently monitor all costs and consistently revise the project budget to guarantee that the project remains within the planned parameters (Le and Sutrisna, 2023).Efficient cost management is crucial for ensuring timely project completion, adherence to budget constraints, and achievement of the necessary quality standards (Abdullahi and Anifowose, 2019). This results in meeting the expectations and fulfilling the demands of stakeholders, whether they are internal or external. Project managers are responsible for calculating all expenses associated with a project, which includes both direct and indirect costs (Efebeli, 2021). It is crucial to include these costs in

the project budget to guarantee accurate financial planning to allow the developmental stride by undertaking such projects (Muhammed et al., 2022b). Project Managers should possess knowledge and expertise in various estimate methodologies, such as analogous or parametric estimation.When operating in a high-risk environment, utilizing a 3-point estimation method that incorporates optimistic, most likely, and pessimistic projections allows for the generation of very accurate estimates (Ellis et al., 2021). Cost overruns can result in project delays or reductions in project scope, leading to a decrease in the quality of the final product and potentially reducing the profitability of the company (Chicoca and Utomo, 2019). If a project has delays in its timeframes, it can lead to a cost overrun and affect the total completion date of the project. This delay can lead to missed opportunities or decreased revenue. Another factor to consider when is that the time spent on finishing a delayed project might prevent businesses and teams from securing larger and more lucrative projects (Hammed et al., 2022). The loss of stakeholder confidence, which is also linked to cost overruns, can have a detrimental influence on stakeholders' perception of the project team's competence in properly managing the project. This can result in a deficiency of support from stakeholders and a decline in morale among team members (Legesse, 2019). The project team and the organization as a whole may suffer reputation damage due to expense overruns which can have a significant impact on future prospects for securing money, forming partnerships, or engaging in collaboration (Kermanshachi andPamidimukkala, 2023). Exceeding the budget can lead to legal and contractual complications, such as contract violations or legal conflicts. This can lead to supplementary expenses and setbacks in the project which thus affects the ROA and ROE of the construction organizations.

Model 2: Cost variance analysis has a significant impact on the return on ROA and ROE of the chosen construction firms in North Central Nigeria. This result was also reached as a result of the empirical data acquired from the numerous statistical studies to substantiate this discovery. The frequency distribution analysis of cost variance analysis (table 11) revealed that the selected companies commonly evaluate the discrepancy between budgeted cost and actual cost of projects. Furthermore, their cost engineers consistently implement corrective measures to address these variations. The findings align with the study conducted by Chicoca and Utomo (2019), which examined the impact of cost drivers on project cost performance. The study revealed that project managers should not only take into account historical cost data, but also future revenues and technical issues related to the project. It emphasized the importance of identifying cost deviations and exploring opportunities to save costs, in order to effectively manage project expenses and allocate contingency funds. The multivariate regression analysis has shown that the cost variance analysis is statistically significant in relation to the return on

asset (0.024) and return on equity (0.037) of the selected construction companies in North Central Nigeria (table 12). This indicates that the cost variance analysis has a significant impact on the financial performance of these companies. The factors that contribute to cost variance encompass unforeseen costs, alterations in project scope, delays, or other variables (Ellis et al., 2021). It is advisable to become acquainted and accustomed to creating a budget that includes details on the quantities of materials, labor and equipment required, along with their respective costs, for each specific task or combination of operations (work package) (Herzanita, 2019). The budget serves as the reference point for the cost control process, against which real expenses are analyzed. By utilizing this data, one may compare the actual use of materials, labor, and equipment with the anticipated needs. This analysis aids in identifying fluctuations in costs or potential savings for certain activities or task packages. It allows for the determination of whether these changes are attributed to alterations in unit prices, labor or equipment efficiency, or the quantity of materials used. In order to control and monitor costs, it is necessary to convert the initial precise cost estimate into a project budget (Yang and Yang, 2021). Throughout the duration of a project, any expenses or costs that arise will be documented in designated job cost accounts linked to each activity or work package. These costs will then be compared to the initial cost estimates for each category. Aside from the cost figures, it is important to additionally include data on the amount of materials and labor required for each task in the project budget. By utilizing this data, one may compare the actual utilization of materials and the amount of labor engaged with the anticipated requirements (Morgan et al., 2017). The construction organizations must develop a budget that includes not only the direct cost components, but also the overhead costs and the working capital for the project which can asset in reducing cost variances in their projects.

Model 3: Earned value analysis has a significant impact on the return on assets and return on equity of the chosen construction firms in North Central Nigeria. This result was also reached as a result of the empirical evidence gathered from multiple statistical tests to substantiate this discovery. The frequency distribution of earned value analysis revealed that the managers of all seven examined organizations consistently evaluate the future performance of their projects and undertake risk assessments for ongoing initiatives (table 11). The multivariate regression table indicates that earned value analysis is statistically significant in relation to return on asset (0.042) and return on equity (0.013). This suggests that earned value analysis has a significant impact on the return on asset and return on equity of the construction companies selected in North Central Nigeria (table 12).EVA facilitates the management of changes in scope to maintain the project's final budget and offer options to determine which activities to streamline or adjust

specifications/performance in order to address cost overruns in other activities (Kaming et al., 2022). It equally represents more than a mere instrument; it constitutes a transformative methodology for the management of construction projects, providing comprehensive insights and oversight over intricate projects (Lutfi et al., 2022). The integration of cost, schedule, and scope elements by EVA is crucial for effectively managing the complex challenges present in construction projects. Despite facing obstacles during its implementation, EVA's capacity to offer precise and actionable information renders it indispensable for proficient project oversight (Hasan et al., 2021).One perception that facilitates problem-solving is the ease and speed with which reports allowed errors to be identified and corrected which encompass not only inaccuracies in numerical data entry but also errors in the assumptions underlying the measurement criteria (Kermanshachi andPamidimukkala, 2023). The database and reporting system enable a straightforward analysis of data consistency as the incorrect data could be promptly identified and rectified. The detection of errors contributed to enhancing operational practices and offered valuable assistance in the decision-making process, as well as in negotiations with suppliers and third parties (Hasan et al., 2021).Ultimately, EVA emerges as a fundamental facilitator for enhancing efficiency, precision, and strategic planning within the construction sector, guaranteeing timely and cost-effective project completion (Muhammed et al., 2022b).

5.0 Conclusion and Recommendations

This study that examines the effect of project cost factors on the financial performance of selected construction companies in North-Central Nigeria shows that there is a significance level for the relationship between PCC and return on asset and return on equity which are 0.021 and 0.032 respectively. For the CVA, multivariate regression analysis has shown that the CVA is statistically significant in relation to the return on asset (0.024) and return on equity (0.037) of the selected construction companies in North Central Nigeria. For EVA, the multivariate regression indicates that earned value analysis is statistically significant in relation to return on asset (0.042) and return on equity (0.013). This study thus, concluded that there has been a significant impact of project cost control, cost variance analysis and earned value analysis on the construction project performances of the selected construction organizations in the North-Central region of Nigeria. The following are recommendations inferred from this study's conclusion:

1. The construction organizations should ascertain the factors contributing to the cost overrun. These factors encompass unexpected occurrences, alterations in the project's extent, inaccurate predictions, or insufficient preparation of which identifying their

fundamental causes might assist the organizations in formulating a strategic plan to effectively tackle them.

2. Accurate cost estimation, well-defined project goals and objectives, consistent progress monitoring, and the execution of a change management procedure are all crucial elements of cost overrun management. In addition, the utilization of competent project managers, the implementation of lean construction principles, and the utilization of technology to oversee expenses can also be highly successful in the management of project cost. By implementing these tactics and optimal methodologies, construction organizations can mitigate the likelihood of exceeding budgeted costs and ensure timely completion of projects.

3. The construction organizations should prioritize the adoption of standardized or readily available estimating software, as it offers advantages in terms of speed, accuracy, reliability, and time savings. In addition, it is strongly advised that organizations maintain records of the specifics of the estimates created during the planning phase, as these can serve as benchmarks for the cost management process.

4. The construction organizations are strongly advised to enhance their utilization of project work breakdown or classification systems to facilitate the cost control and cost management processes. Projects are most effectively managed by dividing them into work packages, which are then optimally planned and monitored through activities as the use of breakdown levels to a project should be determined based on the project's nature, complexity, work plan, and the desired level of control.

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