The Role of Construction Cost Management Practices on Construction Organisations' Strategic Performance

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Cost management practices have remained a vital aspect of project management functions. Despite the efforts of project management, construction projects are still being delivered above budget, with schedule overrun, poor quality and amongst other problems. Poor cost management approaches have been blamed for these problems. Effective cost management improves project performance and the strategic performance of construction organisations. This study aims to assess the role of cost management practice on construction firms' strategic performance in Nigeria. The objectives of the study are to determine the benefits of cost management of the project on the competitive position of construction firms, and the factors influencing cost management strategies of construction firms. This study adopted a well-structured questionnaire administered to construction professionals via electronic means and using snowball sampling technique in the six states of the south-south geopolitical zone of Nigeria. With a response rate of 65.48% and a reliability of index of over 0.70, the gathered data were analysed using frequency, percentage, and relative importance index (RII). It was found that major factors influencing construction cost management are; experience and competence of the project managers, weak management support and control, poor project communications, external economic environment, and lack of use of project management tools (technology). Also, effective cost management was found to play a critical role in the strategic performance of construction organisations; with most benefits being in the areas of waste and expenses reduction, improves operational efficiency need, helps to predict future expenses, ensures procurement effectiveness, and improve profit maximization. Project managers should continuously upgrade their skills for effective cost management to boost the strategic competitive position of their firms.

Keywords: Cost management, construction firms, construction projects, strategic performance, construction industry, Nigeria

1.0 INTRODUCTION

Globally, the construction sector has proven to be a critical sector that should not be ignored in the life of the economy of any nation (Abiodun and Nwaogu, 2021). This is because the construction industry is the economic backbone of nations, as the industry provides jobs and propels growth in other sectors of the economy. (Onyejeakor et al., 2020; Onyeagam et al., 2019). In spite, of the impact of the sector on the life of nations, construction projects suffer from delayed completion, cost overruns, poor quality, materials shortages, among others. These problems occur due to an incorrect management approach to project resources (Ronald & Agung, 2018). In addition, construction projects' risk levels and complexity increase with poor cost management strategies. Developmental projects have failed to meet client needs and project requirements, as a result of poor cost management strategies by construction organisations. Poor cost management leads to poor cost performance. This is a situation in which the project exceeds its initial planned schedule and cost budgets. This has remained a recurring issue affecting a lot of construction projects both in developed and developing economies (Obi et al., 2017; Odediran and Windapo, 2014).

Construction firms are the major actors whose management experiences impact the project and customer satisfaction. According to Teja (2020), construction companies executes construction projects of public or private nature that requires proper management and coordination, with the aim of resources maximization, continuous work progress, revenue generation and profitability, growth and survival of their businesses. A problem that is common in the construction sector is that of effective cost management of construction projects. It is one of the areas the contractor should focus on as it attempts to manage its project portfolio (Teja, 2020). Cost management practices involve all efforts in ensuring that construction projects are delivered within budget (Kim, 2002). Cost is a basic and critical project resource, and when there is the failure of construction organisations to adequately manage this project resource from start to finish via monitoring and controlling, is what leads to projects overshooting their budgets. This is supported by the submission of Phanse et al. (2021) who posits that cost overruns occur where project management is incompetent to sufficiently monitor projects activities and processes from the beginning of the project to the end. Cost management Strategies gives a detailed and sophisticated look to an organisation seeking to obtain a competitive relevance. Barroso and Armando (2020) posit that cost management contribute to the development of strategies for attaining a competitive advantage.

Extant literature revealed that project cost management and control is important, yet construction organizations are yet to develop effective cost management practices in their operations, especially in the construction industry of a developing country like Nigeria. While the majority of the studies on cost management were carried outside Nigeria (Petare & Thakkar, 2012; Tejas, 2020; Albtoush et al., 2020; Iyer and Jha, 2005; Divakar and Jebin, 2018; Meeampol & Ogunlan, 2006; Olawale & Sun, 2010; Zhao et al., 2017; Smith, 2014; Ronald & Agung, 2018; Miri & Khaksefidi, 2015; Barroso and Armando, 2020; Kissi et al., 2016; Annor-Asubonteng et al., 2018; Chigara et al. 2013), only a very few of them were carried out in Nigeria (Obi et al. 2017; Fagbenle et al., 2018; Odediran and Windapo, 2014). This is despite that construction stakeholders know how important project cost is, and the impact it has when properly managed. Fagbenle et al. (2018) suggested that a cost management study be carried out in other regions of Nigeria. There are few studies on cost management of construction projects in a developing country like Nigeria than in developed nations of the world. In addition, Existing studies have failed to emphasise the benefits of cost management practices on the strategic performance of construction projects. It is based on the foregoing that study assesses the role of cost management practice on construction firms' strategic performance in the construction industry. To achieve this, the specific objectives are; (i) to determine the benefits of cost management of the project on the competitive

position of construction firms, and (ii) to determine the factors influencing cost management strategies of construction firms.

It is understood that the outcome of this study will showcase how critical project managers and the management of construction organizations should take cost management function especially in meeting project baseline revenue drive and profit maximization and organizational goal of remaining completive and surviving in the industry. Effective cost management helps to save cost and reduce unnecessary wastages and expenses that could impact value addition, future investments and job creation. Thus, cost management supports the economic and social dimensions of sustainability. This study will also add to the few existing bodies of knowledge on effective cost management impact on construction organizations' strategic performance in developing countries.

2.0 LITERATURE REVIEW

2.1 Cost management in construction projects

A key practice for staying competitive is effective cost management. Cost management involves all the processes for ensuring projects are delivered within the planned budget. The processes involved are planning, estimating, coordination, control and reporting of all cost-matters (Ashworth, 2010; Kern and Formoso, 2006). Cost management involves getting a clear grasp of how and why costs are incurred on a project and taking critical measures to ensure that the planned project budget is not exceeded. The benefits of effective project cost management that have captured the attention of clients (public and private) are its ability to guarantee improved value for money and satisfaction of the clients (Gopalan and Venkataraman, 2015; Obi et al. 2017; Smith, 2014).

In developed countries like the UK, concerted efforts have been made by the government to develop a detailed cost management guideline to help organisations involved in the delivery of public-funded projects to achieve effective project cost management (United Kingdom Office of Government Commerce, 2007). Similarly, efforts are being made in various countries to develop similar cost management guidelines to improve value for monies and ensure the satisfaction of parties to public projects (Obi et a., 2017). Effective cost management can be achieved through a functional system that allows for accurate estimation of cost, planning, monitoring and controlling to keep the cost within budget (Kern and Formoso, 2004). Tejas (2020) advocated for holistic management of materials, plant and equipment; to ensure the cost of projects are kept within budget. Cost management is not an easy task, as project managers would have to be confronted with a lot of issues that required proactive balancing to ensure that their impact on project success is minimised.

2.2 Factors Influencing Cost Management

The ultimate goal of cost management is to ensure that construction projects are delivered within the planned budget. For Horngren et al (1990), cost management is the planning, estimating coordinating, controlling and reporting of the entire cost associated details of a project from the conceptualisation stage through to maintenance and disposal. Furthermore, cost management should not be isolated; it should impact other managerial duties and drive the company's strategies. The construction cost management practices of construction firms are influenced by certain factors that should not be ignored because of the critical importance of cost management.

From the southwestern part of Nigeria, Fagbenle et al. (2018) found that the dominant factors influencing cost, management practices of construction firms are Poor and inappropriate leadership and management, poor resources deployment, too much materials wastages on-site, the mechanism for payment being complex, variations during construction, and materials theft on sites. Iyer and Jha (2005) found that the cost management influencing factors of construction organisations are; the experience and competence of project managers, leadership skills, coordinating skills, top management support; economic situations,

economic and climatic conditions. Impracticable estimates by the estimators, poorly developed brief, insufficient client brief, poor design coordination, poor leadership, poor risks allocation, poor management control, excessive construction materials wastes, underutilization of plant and equipment, materials theft, poor pricing during tendering; were the identified to be the factors affecting cost management practice (Enshassi et al. 2006; Akinsola et al., 1997). Poor resource and budgetary management, poor construction methods and poor communication are factors affecting the cost management of construction firms (Meeampol and Ogunlan, 2006). Unstable construction materials prices, poor planning, poor contract administration, incorrect estimation methods, lack of experience in managing project costs; are factors that critically impact construction cost management (Al-Juwairah, 1997). The cost failure factors identified by (Ikediashi et al., 2014) are poor management of risks, ineffective communication, poor estimation of project schedule and cost.

Divakar and Jebin (2018) assessed the factors influencing effective cost management process implementation in construction and found that the top 14 factors are; Unrealistic schedule imposed in the contract, poor scope definition, accuracy in the estimation of direct and indirect cost, inaccurate activity cost estimate, allocation of direct, indirect and joint cost, ineffective frequency of project budget updates, poor WBS definition, change in schedule, weak regulation and control, often changing subcontractors, lack of proper training and experience of project manager, low productivity of labour, poor updating of cost management information systems, and not implementing project management tools for monitoring and control. Olawale & Sun (2010) found that in the UK, the top factors influencing time and cost control are design changes, poor evaluation of project time and cost, uncertainties, the complexity of works, and poor contractors' performance.

In Ghana, the top factors influencing the cost management practices of indigenous construction firms are Conflict between project parties/stakeholders, Unexpected ground conditions, Poor communication between project team, Poor project management, Lack of expenditure, and control Project variations/Design changes (Annor-Asubonteng et al., 2018). One of the vital factors causing poor cost management practices is insufficient project information for accurately estimating the project cost (Peeters and Madauss, 2008). In Zimbabwe, Chigara et al. (2013) found that shortage of skilled personnel, building materials unavailability in local market, variations and weak cost control systems, are the factors influencing cost management of projects.

Zhao et al. (2017) in New Zealand, states that the factors requiring adequate monitoring and control in cost management situations are market conditions, key stakeholder's influences, regulations regarding building and construction, and external economic environment. Obi et al. (2017) found that the quality of the project team, information availability, management actions and external environment are factors that influence project cost management effectiveness. Kissi et al. (2016) identified weak planning, knowledge issues, poor cost databases, poor designs, poor planning and external conditions; are the barriers to effective cost planning of construction projects. EduPristine (2015) identified three major factors affecting cost management, and they are; advancement in information technology, local and international competition, and changes in services and manufacturing sectors.

Table 1: Factors influencing cost management

S/N	Factors affecting cost management	Source(s)
1	Poor leadership and coordinating skills	Fagbenle et al. (2018);Iyer and Jha (2005); Enshassi et al. (2006); Akinsola et al. (1997);
2	Poor resources deployment	Fagbenle et al. (2018);Meeampol and Ogunlan (2006);
3	Excessive materials wastages on site	Fagbenle et al. (2018); Enshassi et al. (2006); Akinsola et al. (1997);
4	Complex payment mechanism	Fagbenle et al. (2018);
5	Variations/design changes during construction	Fagbenle et al. (2018); Olawale & Sun (2010); Annor-Asubonteng et al. (2018); Chigara et al. (2013);Kissi et al. (2016)
6	Materials theft on sites	Fagbenle et al. (2018); Enshassi et al. (2006); Akinsola et al. (1997);
7	Weak management support and control	Iyer and Jha (2005); Enshassi et al. (2006); Akinsola et al. (1997); Fagbenle et al. (2018);Meeampol and Ogunlan (2006);Obi et al. (2017);
8	the experience and competence of project managers	Iyer and Jha (2005); Al-Juwairah (1997); Divakar and Jebin (2018);Kissi et al. (2016)
9	Unstable construction materials prices,	Iyer and Jha (2005); Al-Juwairah (1997); Zhao et al. (2017);
10	climatic conditions	Iyer and Jha (2005);
11	Impracticable estimates by the estimators	Enshassi et al. (2006); Akinsola et al. (1997); Al-Juwairah (1997);Ikediashi et al. (2014); Divakar and Jebin (2018);
12	Poorly developed project brief	Enshassi et al. (2006); Akinsola et al. (1997); Divakar and Jebin (2018);
13	Poor risks management	Enshassi et al. (2006); Akinsola et al. (1997);Ikediashi et al. (2014); Olawale & Sun (2010);
14	underutilization of plant and equipment	Enshassi et al. (2006); Akinsola et al. (1997);
15	poor pricing during tendering	Enshassi et al. (2006); Akinsola et al. (1997);
16	poor construction methods	Ikediashi et al. (2014); Meeampol and Ogunlan (2006);
17	Poor project communications	Annor-Asubonteng et al. (2018);Meeampol and Ogunlan (2006);Obi et al. (2017);
18	Poor planning	Al-Juwairah (1997); Kissi et al. (2016);
19	poor contract administration and management	Al-Juwairah (1997);Annor-Asubonteng et al. (2018);
20	insufficient project information	(Peeters and Madauss (2008); Divakar and Jebin (2018);Obi et al. (2017);
21	poor evaluation of project time and cost,	Olawale & Sun (2010);
22	complexity of works	Olawale & Sun (2010);
23	poor contractors' performance	Olawale & Sun (2010);

24	The conflict between project parties/stakeholders	Annor-Asubonteng et al. (2018);
25	Unexpected ground conditions	Annor-Asubonteng et al. (2018);
26	shortage of skilled personnel	Chigara et al. (2013);Kissi et al. (2016)
27	building materials unavailability in the local market	Chigara et al. (2013);Zhao et al. (2017);
28	weak cost control systems	Annor-Asubonteng et al. (2018); Chigara et al. (2013); Divakar and Jebin (2018);
29	Often changing subcontractors,	Divakar and Jebin (2018);
30	Low productivity of labour,	Divakar and Jebin (2018);
31	poor updating of cost management information systems	Divakar and Jebin (2018);Kissi et al. (2016)
32	Lack of use of project management tools (technology)	Divakar and Jebin (2018); EduPristine (2015)
33	key stakeholders influences	Zhao et al. (2017); Obi et al. (2017)
34	quality of project team	Obi et al. (2017)
35	Regulations regarding building and construction	Obi et al. (2017)
36	external economic environment	Zhao et al. (2017);Obi et al. (2017); Kissi et al. (2016)

2.3 Benefits of cost management and Strategic performance of construction firms.

Cost management according to Andres (2021), ensures that project cost performance is monitored, changes are corrected and changes that will impact cost are announced to project stakeholders. Effective cost management ensures that the financial health status of businesses is known via cost monitoring. This helps companies to make an informed decision that will bring sustainable growth and progress. Help to optimise the financial planning of the company. This makes the estimation and planning of expenditure more effective and efficient. Effective cost management helps to improve profit maximization and cost reduction on a project. Avoidable activities are eliminated to prevent unnecessary expenses that do not add value. Where the revenues are improved, profit maximised, more monies will be available for other investment opportunities.

Effective project cost management implementation can help project managers make clear the business expectation with stakeholders, scope creep is controlled, ensure that progresses are tracked and corrective action taken where the deviation is noticed, ensure that return on investment is increasing, money losses are avoided, expected margins maintained. It also generates cost data for benchmarking potential future projects and the tracking of future long-term cost trends (Hexagon, 2020). According to the submission of EduPristine (2015), Cost Management is vital for the following reasons; helps in decision making that impact the project objectives and organisational goals, help to reposition businesses for effectiveness, helps to establish overspending on an element or component, the long-term trends of a business can be analysed, helps to predict future expenses, and project-specific costs and that of the businesses can be controlled. Bidkon (2021), Doeren (2020), and Zoe (2017) identified major benefits of cost management to include; 1) Reduction of expenses: project managers utilise the cost management practices to directly put the flow of cost of resources into proper checks. The overall expenses of a company can be reduced through eh implementation of appropriate cost management techniques; 2) Improve operational efficiency: Cost management ensures that projects activities are managed based on a predetermined budget, to ensure the smooth running of organisational and project activities; 3)Procurement effectiveness: proper project cost management ensure that various vendors are identified and the most profitable one is selected for procuring materials and services that are economical and standard, and 4) Streamline technological need: cost management helps to avoid the implementation

of unnecessary technology that does not add value to the organisation, but add to the overall expenditure of the company. These will enable the project manager to save the cost of other beneficial activities.

When there are cost savings in every activity, the cost saved is aggregated and invested in other businesses portfolios of the organisations. The implementation of effective cost management systems by construction organisations has an impact on their competitive advantage and survival in the construction industry. Cost Management plays a critical role in determining the construction organisations strategic performance in the construction industry. Cost management is a strategic approach by businesses to ensure they are successful and competitive. It increases the competitive position of companies beyond the local areas, encourages the adoption of new technologies, changes businesses processes and makes management dynamic and vital in the industry (Rounaghi et al., 2021). Project managers and managers of construction firms should have a competitive attitude. All efforts of management should be targeted towards remaining relevant and competitive in the industry. Parameters that are considered in determining the success of a construction project is how well the project has fared in terms of cost, time, and quality. Cost management is a strategic competitive tool for meeting and exceeding the needs of the clients and objectives of the projects.

Cost management is used to support the corporate strategy via the provision of information that the organisation can use to better compete in the industry. As can be seen in Figure 1, the implementations of effective cost management practices have an impact on both the project and the implementing organisations. On the construction projects, it ensures that projects are delivered within cost, and with required quality specifications and to achieve clients' satisfaction. Construction firms would experience improved revenue and profitability, business growth. The ultimate end of effective project cost management is the improvement of the strategies performance of the organisations. Organisational, survival and sustenance is what drives cost management for the attainment of a higher competitive position in the industry.

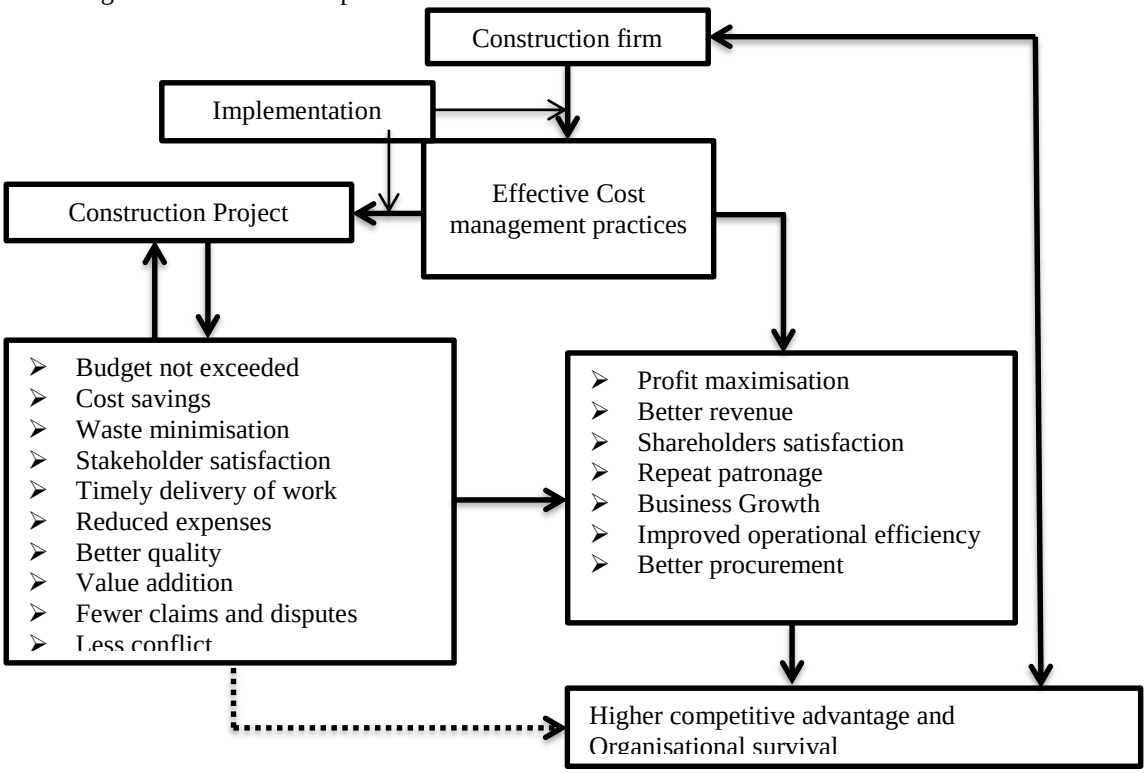

Figure 1: Cost management and Construction Firms strategic performance Source

3.0 RESEARCH METHODOLOGY

The purpose of this study is to assess the role of cost management practice on construction firms' strategic performance in the construction industry in Nigeria. With the specific objectives of determining the benefits of cost management of the project on the competitive position of construction firms, and the factors influencing cost management strategies of construction firms. A well-structured questionnaire that is suitable for large sample coverage within a shorter time was adopted to collect data from the target participants. The target participants are built environment experts such as (Quantity Surveyors, Engineers, Builders, Architects) working in the South-South geological zone of Nigeria, and who have attained managerial positions or are at least responsible for the management of project/organisational resources, and are actively involved in the delivery project or running of an organisation. A minimum of 5 years of working experience and experience in construction project cost management was also set as a criterion for participation in the study. The essence of these sampling selection criteria is to gather quality and unbiased data (Nwaki et al., 2021). The six states in the study area are Bayelsa state, Akwa Ibom, Delta, Cross River, Rivers states and Edo; the population size of these experts within these states as reported in the study of (Otali et al., 2020) is 1252. The sample size of 197 was obtained using the population of 1252 from the (Krejcie and Morgan, 1970) sample size determination table is 197.

The literature review led to questionnaire development, and the questionnaire used was divided into three parts; the 1st part garnered information on the demographic characteristic of the respondents. The 2nd part collected information on the factors influencing cost management of construction projects, and the 3rd part collected data on the benefits of cost management on the strategic performance of construction organisations. The questionnaire was based on a 5-point Likert scale in which 1 = lowest score/rating and 5=highest score/rating. The respondents were required to rate the variables on the factors influencing cost management based on the level of influence, and the variables on benefits of cost management based on level of agreement/impact.

The snowball sampling techniques via Google form was the procedure for the survey and data collection. The snowball sampling technique is based on referrals and it can increase sample response rate (Heckathorn, 2011; Atkinson, 2001). The Google form questionnaire is faster and can cover a large audience at a relatively shorter time. The Google form is an electronic means of a questionnaire survey that helps to avoid hardcopy questionnaires; it is eco-friendly (Nwaki and Eze, 2020). The sampling method adopted in this study was informed by the survey criteria. Since it was impracticable to get a separate database of professionals or companies that meet the study participation criteria, the snowball sampling method was found appropriate.

A total of 129 responses were received over the survey period of 15weeks. The effective response of 129 is equivalent to a 65.48% response rate, and this is far above the range of 20-30&% suggested by (Moser & Kalton, 2001). The gathered data were analysed using frequency, percentage, and relative importance index (RII). The Cronbach's alpha test was used to determine the reliability of the research instrument and the internal consistency of responses. As can be seen in Table 2, the Cronbach's alpha coefficients obtained are above 0.70 suggested by (Hair et al., 2010; Pallant, 2005). This implies high instrument reliability and quality of data.

Data normality distribution was done using Shapiro-Wilk test as it is the most widely used where the sample size if well below 2000 (Ghasemi and Zahediasl, 2012). The data collected on the factors affecting cost management and the benefits of cost management where found to have their p-values to be less than 5% significant level (see Table 3 and 4). Based on this, the data were found adjudged non-parametric in nature. The methodological flow chart is shown in figure 2 below.

Table 2: Reliability Test

Case Processing Summary				**Reliability Statistics**	
		N	**%**	**Cronbach's Alpha**	**No. of items**
Cases 1: Factors affecting cost management	Valid	129	100.0	0.801	36
	Excluded[a]	0	0		
	Total	129	100.0		
Cases 2: Benefits of cost management	Valid	129	100.0	0.797	22
	Excluded[a]	0	0		
	Total	129	100.0		

a. Listwise deletion based on all variables in the procedure.

Table 3: Tests of Normality of data obtained on Factors affecting cost management

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Poor leadership and coordinating skills	0.337	129	0.000	0.674	129	0.000
Poor resources deployment	0.258	129	0.000	0.767	129	0.000
Excessive materials wastages on site	0.421	129	0.000	0.552	129	0.000
Complex payment mechanism	0.420	129	0.000	0.562	129	0.000
Variations/design changes during construction	0.314	129	0.000	0.726	129	0.000
Materials theft on sites	0.337	129	0.000	0.648	129	0.000
Weak management support and control	0.386	129	0.000	0.652	129	0.000
the experience and competence project managers	0.436	129	0.000	0.510	129	0.000
Unstable construction materials prices,	0.287	129	0.000	0.781	129	0.000
climatic conditions	0.271	129	0.000	0.740	129	0.000
Impracticable estimates by the estimators	0.332	129	0.000	0.731	129	0.000
Poorly developed project brief	0.370	129	0.000	0.654	129	0.000
Poor risks management	0.292	129	0.000	0.772	129	0.000
underutilization of plant and equipment	0.395	129	0.000	0.595	129	0.000
poor pricing during tendering	0.279	129	0.000	0.767	129	0.000
poor construction methods	0.343	129	0.000	0.728	129	0.000
Poor project communications	0.412	129	0.000	0.607	129	0.000
Poor planning	0.373	129	0.000	0.660	129	0.000
poor contract administration and management	0.236	129	0.000	0.816	129	0.000
insufficient project information	0.248	129	0.000	0.771	129	0.000
poor evaluation of project time and cost,	0.289	129	0.000	0.789	129	0.000
complexity of works	0.303	129	0.000	0.768	129	0.000
poor contractors' performance	0.287	129	0.000	0.780	129	0.000
Conflict between project parties / stakeholders	0.340	129	0.000	0.710	129	0.000
Unexpected ground conditions	0.248	129	0.000	0.819	129	0.000
shortage of skilled personnel	0.278	129	0.000	0.787	129	0.000
building materials unavailability in local market	0.338	129	0.000	0.700	129	0.000
weak cost control systems	0.331	129	0.000	0.733	129	0.000
Often changing subcontractors	0.270	129	0.000	0.804	129	0.000
Low productivity of labour	0.329	129	0.000	0.694	129	0.000
poor updating of cost management information systems	0.292	129	0.000	0.758	129	0.000

Lack of use of project management tools (technology)	0.383	129	0.000	0.674	129	0.000
key stakeholders influences	0.331	129	0.000	0.735	129	0.000
quality of project team	0.337	129	0.000	0.718	129	0.000
Regulations regarding building and construction	0.315	129	0.000	0.730	129	0.000
external economic environment	0.418	129	0.000	0.576	129	0.000

Table 4: Tests of Normality of data obtained on the Benefits of cost management

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Improve value for money for the parties and this can lead to repeat patronage	0.398	129	0.000	0.582	129	0.000
Leads to Client satisfaction	0.430	129	0.000	0.586	129	0.000
ensures that project cost performance are monitored	0.470	129	0.000	0.506	129	0.000
enables the correction of changes that will impact projects outcome	0.466	129	0.000	0.508	129	0.000
financial health status of businesses is known via cost monitoring	0.360	129	0.000	0.685	129	0.000
helps companies to make an inform decision that will bring a sustainable growth and progress.	0.353	129	0.000	0.638	129	0.000
Help to optimise financial planning of the company	0.356	129	0.000	0.702	129	0.000
improve profit maximization	0.484	129	0.000	0.461	129	0.000
help project managers make clear business expectation with stakeholders	0.301	129	0.000	0.772	129	0.000
scope creep is controlled	0.312	129	0.000	0.715	129	0.000
ensure that return on investment is increases	0.345	129	0.000	0.702	129	0.000
generates cost data for benchmarking of potential future projects	0.432	129	0.000	0.576	129	0.000
Helps in decision making that impact on the project objectives and organisational goals	0.329	129	0.000	0.750	129	0.000
Help to reposition businesses for effectiveness	0.440	129	0.000	0.548	129	0.000
Helps to establish overspending on an element or component	0.306	129	0.000	0.755	129	0.000
The long-term trends of a business can be analysed	0.390	129	0.000	0.678	129	0.000
Helps to predict future expenses	0.472	129	0.000	0.512	129	0.000
Project specific cost and that of the businesses can be controlled	0.431	129	0.000	0.581	129	0.000
Help reduce wastage and expenses	0.487	129	0.000	0.463	129	0.000
Improve operational efficiency need	0.481	129	0.000	0.491	129	0.000
Ensures Procurement effectiveness	0.405	129	0.000	0.642	129	0.000
Streamline technological need	0.350	129	0.000	0.725	129	0.000

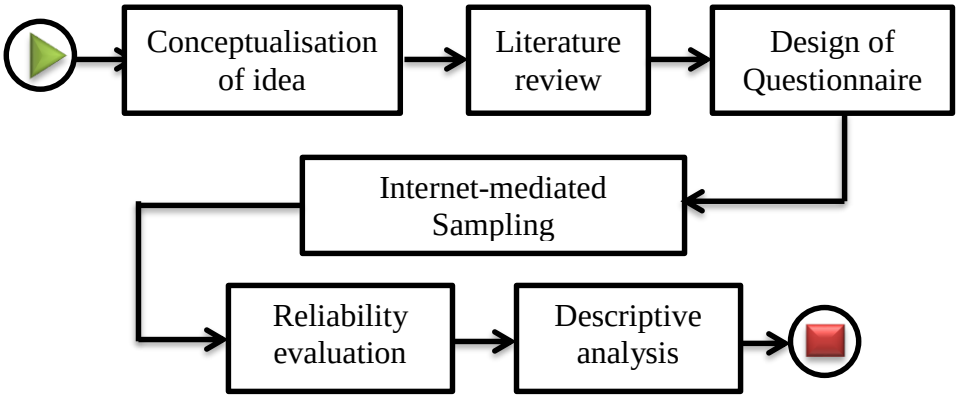

Figure 2: Methodological flow chart

4.0 RESULTS AND DISCUSSION

4.1 Respondents background characteristics

Table 5 shows that 62.02% of the organisations of the respondents are privately owned and 37.98% are owned by the public. In terms of the distribution of the respondents by states, the highest is from Rivers state with 29.46%, followed by Cross River (18.605), then Edo state (16.28%), Delta state (15.50%), Akwa Ibom (12.4%) and lastly Bayelsa state (7.75%). Their professions show that the Engineers are more by 37.98%, followed by Quantity Surveyors (29.46%), then Architects (22.48%), and Builders (10.08%). The average working experience of the respondents is about 12.04 years. This shows a considerable length of time to gain adequate experience and knowledge and attainment of managerial positions in the industry. The educational qualification shows that 14.73% have HND, 10.08% have PGD, 50.39% have B.Sc/B.Tech., 22.48% have MSc./M.Tech., and PhD is 2.33%. The professional status of the respondents shows that 83.72% of them are chartered members of the respective professional bodies, and only 16.25% are yet to obtain their professional qualifications.

The result obtained here shows a fair representation of the participants across the states that participated in the study. It also revealed a reasonable representation of the key construction experts that are employed by construction organisations. Also, participants have the requisite experiences and are educationally and professionally qualified to participate in this study.

Table 5: Respondents background characteristics

Variables	Classification	Freq.	%
Ownership of organisations	Public organisations	49	37.98%
	Private organisation	80	62.02%
	TOTAL	**129**	**100.00%**
States in the study area	Akwa Ibom	16	12.40%
	Bayelsa state	10	7.75%
	Cross River	24	18.60%
	Delta	20	15.50%
	Edo	21	16.28%
	Rivers	38	29.46%
	TOTAL	**129**	**100.00%**
Participants professions	Architect	29	22.48%
	Builders	13	10.08%
	Engineers (Civil/structural & Services)	49	37.98%
	Quantity Surveyors	38	29.46%
	TOTAL	**129**	**100.00%**
Years of experience	5-10years	37	28.68%
	11-15 years	49	37.98%
	16-20 years	25	19.38%
	21-above	18	13.95%
	TOTAL	**129**	**100.00%**
Educational Qualification	Higher National Diploma (HND)	19	14.73%
	Postgraduate Diploma (PGD)	13	10.08%
	Bachelor of Science/technology (B.Sc./B.Tech)	65	50.39%
	Master's Degree (MSc./M.Tech.)	29	22.48%
	Doctorate degree (PhD)	3	2.33%
	TOTAL	**129**	**100.00%**
Professional Status	Member Nigerian Institute of Architect (MNIA)	24	18.60%
	Member Nigerian Institute of Builders (MNIOB)	10	7.75%
	Member Nigerian Society of Engineers (MNSE)	43	33.33%
	Member Nigerian Institute of Quantity Surveyors (MNIQS)	31	24.03%
	Probationer	21	16.28%
	TOTAL	**129**	**100.00%**

4.2 Factors influencing cost management

The result of the analysis of the data gathered on the factor influencing cost management of construction projects is shown in Table 6. It can be seen that the top ten (10) factors influencing cost management are; Experience and competence of the project managers (RII=0.898), Weak management support and control (RII=0.895), Poor project communications (RII=0.893), external economic environment (RII=0.891), Lack of use of project management tools (technology) (RII=0.890), Poor leadership and coordinating skills (RII=0.887), underutilization of plant and equipment (RII=0.884), Excessive materials wastages on-site (RII=0.878), Poorly developed project brief (RII=0.873), and Materials theft on sites (RII=0.871). While the least factor influencing cost management are; poor updating of cost management information systems (RII=0.798), Poor risks management (RII=0.791), building materials unavailability

in the local market (RII=0.780), Climatic conditions (RII=0.775), poor contract administration and management (RII=0.774), and insufficient project information (RII=0.738).

Notwithstanding the relative ranking of these factors, they all have a high influence on the cost management practices of construction organisations. This is premised on the range of RII of the factors, the higher RII= 0.898 and the lowest is 0.738, with an average RII of 0.842.

The results of this section are in line with the reports of (Enshassi et al., 2006; Akinsola et al., 1997; Iyer and Jha, 2005; Fagbenle et al., 2018). Iyer and Jha (2005) reported that poor leadership, management, experience and competencies of project managers play a critical role in achieving effective cost management functions. If the leadership of an organisation are weak or lack the appropriate cost management skills, the result will be losses and wastages and poor resources allocations and management. Project managers' competence is a key determinant of how successful a project will be. A cost management skill is a vital knowledge the project manager must possess to ensure that project baseline is not exceeded. The experience and competence of the project manager were identified by (Al-Juwairah, 1997; Divakar and Jebin, 2018; Kissi et al., 2016) as a critical factor influencing cost management practices.

Poor leadership and management were also highlighted by Fagbenle et al. (2018) as being among the vital factors influencing the success of cost management. Where there is no will by top management to support efforts target at strategically positioning the company, the order will be wastage, high expenses and under usage of resources. Leadership and management-related factors were highlighted as being among the top factors influencing effective cost management of construction projects (Enshassi et al., 2006; Akinsola et al., 1997; Meeampol and Ogunlan, 2006; Obi et al., 2017). Poor management leads to the underutilisation of plants and equipment, thus, resulting in a lot of wastes.

Material theft on site is another way projects cost get wasted; theft ad pilferage on site should be properly checked and controlled by the project manager and other experts saddled with resource management responsibilities. One of the factors affecting cost management is materials theft on sites (Enshassi et al., 2006; Fagbenle et al., 2018; Akinsola et al., 1997). Ineffective communications on a construction project is a major cause of cost overrun and conflicts on construction projects. Poor communication among project team members, poor communication between the management team and production team is major problem project baselines are not met. Owing to the vital role communication play in project delivery and organisation performance, especially in communicating or disseminating cost impacting information, (Annor-Asubonteng et al., 2018; Meeampol and Ogunlan, 2006; Obi et al., 2017) communication problem is one of the influencing factors of cost management.

Poorly developed project briefs can cause a serious problem at construction phases as a lot of information would not be available. It can lead to variations, design changes and serious scope creep. Lall these have an impact on cost and this could be the reason why poor project brief development is among the factors influencing cot management identified by (Enshassi et al., 2006; Akinsola et al., 1997; Divakar and Jebin, 2018). Lack of use of project management tools (technology) by organisations and the impact of the external economic environment on the projects are other factors affecting cost management. This is in line with the findings of (Divakar and Jebin, 2018; Zhao et al., 2017; Obi et al., 2017; Kissi et al., 2016).

Table 6: Factors affecting construction cost management

S/N	Factors affecting cost management	RII	Rank
1	Poor leadership and coordinating skills	0.887	6th
2	Poor resources deployment	0.819	28th
3	Excessive materials wastages on site	0.878	8th
4	Weak management support and control	0.895	2nd
5	Variations/design changes during construction	0.854	15th
6	Materials theft on sites	0.871	10th
7	Complex payment mechanism	0.865	12th
8	the experience and competence of project managers	0.898	1st
9	Unstable construction materials prices,	0.843	19th
10	climatic conditions	0.775	34th
11	Impracticable estimates by the estimators	0.868	11th
12	Poorly developed project brief	0.873	9th
13	Poor risks management	0.791	32nd
14	underutilization of plant and equipment	0.884	7th
15	poor pricing during tendering	0.843	19th
16	poor construction methods	0.856	14th
17	Poor project communications	0.893	3rd
18	Poor planning	0.836	21st
19	poor contract administration and management	0.774	35th
20	insufficient project information	0.738	36th
21	poor evaluation of project time and cost	0.836	21st
22	complexity of works	0.826	24th
23	poor contractors' performance	0.819	28th
24	Conflict between project parties/stakeholders	0.822	27th
25	Unexpected ground conditions	0.806	30th
26	shortage of skilled personnel	0.826	24th
27	building materials unavailability in the local market	0.780	33rd
28	weak cost control systems	0.848	16th
29	Often changing subcontractors	0.826	24th
30	Low productivity of labour	0.848	16th
31	poor updating of cost management information systems	0.798	31st
32	Lack of use of project management tools (technology)	0.890	5th
33	key stakeholders influences	0.857	13th
34	quality of project team	0.845	18th
35	Regulations regarding building and construction	0.836	21st
36	external economic environment	0.891	4th

4.3 Benefits of cost management

The result of the analysis of the data gathered on the benefits of cost management is shown in Table 7. The result shows that the top ten (10) benefits of cost management are; Help reduce wastage and expenses (RII=0.946), Improve operational efficiency need (RII=0.938), Helps to predict future expenses (RII=0.912), Ensures Procurement effectiveness (RII=0.904), improve profit maximization (RII=0.898), enables the correction of changes that will impact projects outcome (RII=0.895), generates cost data for benchmarking of potential future projects (RII=0.891), Leads to Client satisfaction (RII=0.887), improve value for money for the parties and this can lead to repeat patronage (RII=0.885), and Help to reposition businesses for effectiveness (RII=0.884). The least benefits of cost management according to the rating of the respondents are; Helps to establish overspending on an element or component (RII=0.840), Streamline technological need (RII=0.840), Help to optimise financial planning of the company (RII=0.833), Helps in decision making that impact on the project objectives and organisational goals (RII=0.792), and scope creep is controlled (RIII=0.781).

Similarly, regardless of the relative ranking of the assessed variables, cost management has very high benefits to construction projects and organisations. The relative importance index (RII) is ranged from 0.946 to 0.781, with an average RII score of 0.872. Therefore, cost management is highly beneficial in the construction industry.

Cost Management plays a critical role in determining the construction organisations strategic performance in the construction industry. Cost management is a strategic approach by businesses to ensure they are successful and competitive. It increases the competitive position of companies beyond the local areas, encourages the adoption of new technologies, changes businesses processes and makes management dynamic and vital in the industry the role of cost management on organisational growth and survival is well acknowledged in the reports of (Rounaghi et al., 2021; EduPristine, 2015; Bidkon, 2021; Doeren, 2020).

Table 7: Benefits of cost management

S/N	Variables	RII	Rank
1	Improve value for money for the parties and this can lead to repeat patronage	0.885	9th
2	Lead to Client satisfaction	0.887	8th
3	Ensures that project cost performance is monitored	0.878	11th
4	Enables the correction of changes that will impact projects outcome	0.895	6th
5	The financial health status of businesses is known via cost monitoring	0.865	14th
6	Helps companies to make an informed decision that will bring sustainable growth and progress	0.868	12th
7	Help to optimise financial planning of the company	0.833	20th
8	Improve profit maximization	0.898	5th
9	Help project managers make clear business expectations with stakeholders	0.845	17th
10	Scope creep is controlled	0.781	22nd
11	Ensure that return on investment is increases	0.860	16th
12	Generates cost data for benchmarking of potential future projects	0.891	7th
13	Helps in decision making that impact the project objectives and organisational goals.	0.792	21st
14	Help to reposition businesses for effectiveness	0.884	10th
15	Helps to establish overspending on an element or component	0.840	18th
16	The long-term trends of a business can be analysed	0.865	14th
17	Helps to predict future expenses	0.912	3rd
18	Project-specific cost and that of the businesses can be controlled	0.867	13th
19	Help reduce wastage and expenses	0.946	1st
20	Improves operational efficiency need	0.938	2nd
21	Ensures Procurement effectiveness	0.904	4th
22	Streamline technological need	0.840	18th

4.4 Cost management and Strategic performance of construction firms

The result of the analysis of the data collected on the question "What is the level of impact these benefits have on the strategic competitive performance of your organisation?" in figure 3, shows that cost management benefits have a very high impact on the strategic competitive advantage of construction organisations. This is premised on the percentage of participants who rated the strategic importance of cost management on construction firms. 51% indicated that the impact of cost management on construction firm's strategic performance is 'very high', 32% indicated 'high impact', 12% indicated 'moderate impact', 4% 'low impact', and 2% 'very low impact'.

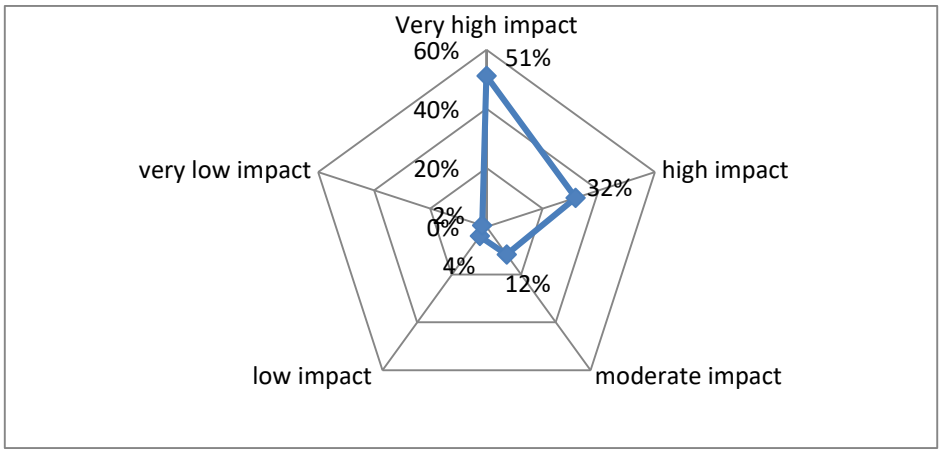

Figure 3: Strategic competitive impact of cost management

Figure 4 show the result of the analysis of the data collected on the question "What is the level of impact these benefits have on the survival of your organisation?" It can be seen that more of the respondents rated the impact of effective cost management very high with 43%; this is followed by those who indicated that it has a high impact (39%), then moderate impact (16%), 2% low impact and 0% very low impact. Thus, it is concluded that effective cost management has a very high impact on the survival of construction organisations.

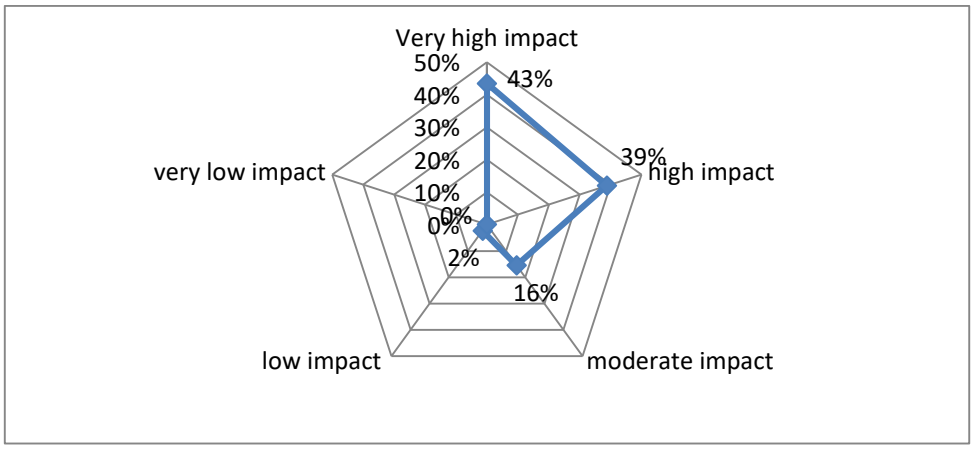

Figure 4: Survival impact of cost management

5.0 CONCLUSION AND RECOMMENDATIONS

The purpose of this study is to assess the role of cost management practice on construction firms' strategic performance in the construction industry in Nigeria. With the specific objectives of determining the benefits of cost management of the project on the competitive position of construction firms, and the factors influencing cost management strategies of construction firms. This study used a well-structured questionnaire administered to construction professionals via electronic means and using snowball sampling techniques in the 6 states of the south-south geopolitical zone of Nigeria. Interesting findings were made and discussed.

The study found that the top factors influencing construction cost management are; experience and competence of the project managers, weak management support and control, poor project communications, external economic environment, lack of use of project management tools (technology), poor leadership and coordinating skills, underutilization of plant and equipment, excessive materials wastages on-site, poorly developed project brief, and materials theft on sites. Also, the top benefits of cost management are; help reduce wastage and expenses, improve operational efficiency need, helps to predict future expenses, ensures procurement effectiveness, improve profit maximization, enables the correction of changes that will impact projects outcome, generates cost data for benchmarking of potential future projects, leads to client satisfaction, improve value for money for the parties and this can lead to repeat patronage, and help to reposition businesses for effectiveness. However, based on the average weight of the relative importance index scores of the assessed variables, it was concluded that all the assessed factors influence cost management and that cost management is highly beneficial to projects and organisations in the construction industry. Effective implementation of cost management practices has a very high impact on the survival and sustenance of construction firms. Cost management is a strategic tool for construction firms to attain a better competitive advantage in the construction industry. Therefore, cost management plays a critical role in the strategic performance of construction organisations.

Effective Cost management implementation on construction projects ensure that the construction project's budget is not exceeded, lead to cost savings, waste minimisation, stakeholder satisfaction, timely delivery of work, reduced expenses, better quality, value addition, fewer claims and disputes, less conflict. The implication of cost management practices implementation on the implementing organisations are profit maximisation, better revenue, shareholder's satisfaction, repeat patronage, business growth, improved operational efficiency, and better procurement. The ultimate impact is an increase in competitive advantage and survival in the construction industry. The outcome of this study is critical to the success of the project managers who are vested with the responsibility of ensuring that projects are delivered within baselines, and that profit is maximised and organisational goals and survival is attained. The growth and survival of construction firms are anchored on how well they manage the resources available to them. This study is a pointer to the need to take cost management very serious by construction firms. Leadership and management are vital factors to the success of cost management efforts; this study will help the leadership of construction firms to support and invest in tools and facilities that will aid the smooth performance of cost management functions. Estimation of project resources is a vital function of the project managers. The experts involved should take adequate care in ensuring that adequate estimates of project resources are produced. This study will also add to the few existing bodies of knowledge on cost management in developing countries. Project managers should continuously upgrade their skills for effective cost management to boost the strategic competitive position of their firms.

This study however has some limitations. First of all, this study is limited by geographical location, and secondly, the sample size may not be representative enough to enable the generalisation of the results. Therefore, care should be taken in the generalisation of its findings. A similar study is therefore advised in other regions or states or countries, this will enable more results to be available for comparison. While management plays a critical

role in the strategic competitiveness of businesses, the competencies and skills requires of a project manager for a successful cost management function requires investigation.

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