**Cost Planning Practices in the Nigerian Construction Industry**

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**Abstract**

Cost planning remains a very efficient instrument for controlling the project’s cost at the initial stage, its importance cannot be overemphasized in every construction activity in both developed and emerging nations. Meanwhile in most emerging nations, the implementation of adequate practice of cost planning are minimal, hence the rampant abandonment of project caused by project cost overrun that also contributes to gross underdevelopment, infrastructural deficit, and poor living standard in these countries. This study examines the practices of cost planning in the Nigerian construction industry. Both primary and secondary methods of data generation were engaged in this study. Data generated from this study is further analyzed using mean item score, ranking and correlation. The respondents to the survey are experienced cost consultants across Nigeria. The findings reveal that Nigerian cost consultants’ awareness of cost planning is commendable as well as application of cost planning in the industry. In addition, elemental cost planning, unit cost and comparative cost planning methods were of greater use amidst others. Further, the study shows a strong positive correlation between awareness and application. This study strongly recommends that cost planning techniques be used from the very beginning of each construction endeavors by construction practitioners and policymakers who are looking for creative ways to manage costs throughout the planning and execution of construction projects.

**Keywords:** Construction industry, cost consultant, cost planning, Nigeria, practices.

1. **Introduction**

Cost planning is a very effective tool for controlling cost of construction development from start to finish with the intention of producing a good value for money project for the client within his budget and agreed time (Kerzner, 2017). One of the most essential criteria in assessing whether a project is viable or feasible is cost planning (San Cristobal, 2009). Nwachukwu (2003) describes cost planning as a way of providing cost recommendations to consider while designing. Also, Ramabodu and Vester (2010) opined that during early stages of a project cost planning practices enables the client to have the knowledge of the probable completion cost of the project. The needs for an effective strategy for controlling the cost of a construction projects from the start of the development down to finish brought about the concept of cost planning practices (Corbett & Rowley, 1999).

Mansfield et al*.* (1994); Sambasivan and Soon (2007); Garg and Garg (2013) and Rwakarehe and Mfinanga (2014) conducted researches amidst others to determine the causes of project cost overruns in the construction industry around the world. The causes vary from one project to another; inadequate project cost planning is one of the most prominent factors driving construction delays and cost overruns in Nigeria*.* Ogunde et al. (2017) also attested that proper planning will minimize delay in construction project. According to Ogunsemi (2002), the lack of proper planning and non-use of cost planning techniques are one of the causes of building collapse in Lagos State. Essenwa (2004) opined that one of the major cause of project abandonment is inadequate cost planning. Ayodele (2011), in his study also identify inadequate project planning (which includes cost planning) at early stages as one of the most common causes of abandonment of construction projects in Nigeria. Even with the introduction of more modern procurement practices such as Public Private Partnerships (PPP) and prime contracting, the importance of adequate cost planning does not appear to be diminishing. Matipa et al. (2013*)* recorded that the importance of efficient practice of cost planning are increasing after the worldwide financial crises of the late 2000s and the realization that cost efficiency is an essential elements of a successful construction project.

Several studies has being done in the area of cost management (Chigara *et al*., 2013; Annor-Asubonteng *et al*., 2018; Fagbenle *et al.,* 2018; Ojo *et al*., 2022; Okereke *et al*., 2022 & Tembo *et al*., 2022) and cost control practices (Bahaudin *et al*., 2012; Ojedokun *et al*., 2012; Otim *et al*., 2012; Morsy, 2014; Premalal *et al*., 2015 & Cooray *et al*., 2018) but little has been done on cost planning practices apparent by the scarce writing and study on this specific topic. The only research on practice of cost planning in the building sector that can be accessed was carried out by Ernest *et al*. (2017) in Ghana’s construction sector. The knowledge of cost planning practices is mostly available in text books and taught in the four walls of a classroom.

In order to close the gap in knowledge, this study aim to investigate cost planning practices in the Nigerian construction industry while fulfilling the following objectives:

* To evaluate the Quantity Surveyors level of awareness of cost planning methods in the Nigerian Construction Industry;
* To examine the frequency of use of cost planning methods by Quantity surveyors on construction projects in Nigeria.
* To determine the relationship between level of awareness and frequency of use of cost planning methods in the Nigeria Construction Industry.
1. **Research Methodology**

Quantitative method was employed in this research by using close ended questionnaire designed to gather the required data from the respondents having reviewed existing literatures to identify the cost planning methods as variables for the study. The research instrument was sectioned into two:

* Section one covers the general details of the respondents germane to the study such as academic qualification, professional membership, industrial experience, the section of the construction industry they work, job title, details about the firm e.t.c.
* The second section depicted questions that answers the objectives of the study. The first being level of awareness of cost planning method using likert scale rating ‘‘1= Not at all aware to 5= Extremely aware’’. The second being frequency of use of cost planning methods which was assessed on a five point likert scale ‘‘1 = Never used to 5 = Frequently used’’.

The target respondents are senior members in quantity surveying firms across Nigeria; as such purposive sampling was used. Questionnaire administration involves the use of Online (Google form) for offices not within the researchers reach and face to face approach. Using the list of Registered Quantity surveying firms with current practice license as at 12th August, 2022 published in Daily Trust Newspaper on Monday, August 15, 2022 page 44 having a total number of 57 firms, at least two respondents from each firm were targeted. A total of 114 questionnaires were administered using mails, contacts from whatsapp platforms of each state. 73 completed questionnaires in total were submitted and considered fit for the study having checked for omissions and completeness, this gives a returned percentage of 64% this is deemed sufficient for the research.

1. **Results and Discussion**
	1. **Demographic information of respondents and firm**

Tables 1 and 2 depict the particulars of the professional that attended to the questionnaire survey and the details of the registered quantity surveying firm where they work respectively.

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| **Table 1: Demographic information of respondents** |
| **Demographic Information**  | **Frequency** | **Percentage** |
| Highest academic qualification attained | OND/HND | 12 | 16.4 |
| BSC/BTECH | 21 | 28.8 |
| MSC/MBA/MPM | 32 | 43.8 |
| PhD | 8 | 11.0 |
| Grade of professional membership | MNIQS | 21 | 28.8 |
| RQS | 13 | 17.8 |
| Fellow | 39 | 53.4 |
| Industrial experience | 1-5 yrs | 10 | 13.7 |
| 6-10 yrs | 10 | 13.7 |
| 11-15 yrs | 9 | 12.3 |
| 16-20 yrs | 2 | 2.7 |
| Above 20 yrs | 42 | 57.5 |
| Job title of respondent | Assistant QS | 6 | 8.2 |
| Quantity Surveyor | 15 | 20.5 |
| Principal QS | 2 | 2.8 |
| Chief QS | 13 | 17.8 |
| Partner | 15 | 20.5 |
| Principal Partner/ Consultant | 22 | 30.1 |

As shown in Table 1, it is evident that over 83% of the respondent has minimum of BSC/BTech as the highest academic qualification attained, all respondents are member of the Nigerian Institute of Quantity Surveyors with 53.4% having risen to the fellow cadre. More than 60% of the respondents have over 10 years experience in the construction industry. Pertaining to job title of respondents, larger percentage of the respondents 71.2% are from principal QS cadre upward, this is expected as the target respondents which is believe will give valid response to the questionnaire are senior practitioners.

The analysis in Table 2 however shows the firms demographic information, a larger percentage of the firm 47.9% are medium size, majority 46.6% of the registered quantity surveying firms are located in the southwestern part of Nigeria, this is not surprising due to the volume of construction activities undertaken in the states that forms this region. Followed by the Southwest is the North central with 26%, Northwest and Southsouth shares the same percentage of 9.6% same goes for North east and South east having 4.1% each. With regards to staff strength of the firms, 50.7% engaged less than 20 persons, 13.7% engaged between 20 to 40 persons, 9.6% engaged 41-60 persons while 26.1 % has more than 60 persons as members of staff. This result is consistent with earlier result obtained for size of firm. It is delighting to discover that 52% of the firms have been in operation for more than 20years with only 6.8% below 5years of existing as a quantity surveying firms. These further buttresses the quality of the response gathered for this study. The result further reveals that 89% of the firms have 3 offices or less within Nigeria while those with 4 or more offices represent 5.5% of the population. Also larger percentages 54.8% of the firms are involved in all categories of work in the construction industry. Conclusively, about 60% of the firms are currently working on more than 5 projects as at the time of this investigation.

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| **Table 2: Demographic Information of Registered Quantity Surveying Firm** |
| **Firm Demographic Information**  | **Frequency** | **Percentage** |
| Size of respondent’s Firm | Small | 21 | 28.8 |
| Medium | 35 | 47.9 |
| Large | 17 | 23.3 |
| Firms Regional Location | North Central | 19 | 26.0 |
| North East | 3 | 4.1 |
| North West | 7 | 9.6 |
| South East | 3 | 4.1 |
| South South | 7 | 9.6 |
| South West | 34 | 46.6 |
| What is the staff strength of your Firm? | Below 20 persons | 37 | 50.7 |
| 20-40 persons | 10 | 13.7 |
| 41-60 persons | 7 | 9.6 |
| More than 60 persons | 19 | 26.1 |
| How many years has your firm been in operation? | Below 5years | 5 | 6.8 |
| 5-10years | 14 | 19.2 |
| 11-15years | 7 | 9.6 |
| 16-20years | 9 | 12.3 |
| Above 20years | 38 | 52.0 |
| How many offices do you have in Nigeria? | 1 | 29 | 39.7 |
| 2 | 20 | 27.4 |
| 3 | 16 | 21.9 |
| 4 | 4 | 5.5 |
| More than 4 | 4 | 5.5 |
| Sector in the construction industry | Heavy Engineering | 1 | 1.4 |
| Civil Engineering | 1 | 1.4 |
| Building construction | 28 | 38.4 |
| Both Heavy and Civil Engineering | 3 | 4.1 |
| All | 40 | 54.8 |
| How many projects are you currently engaged on? | 1-5 | 30 | 41.1 |
| 6-10 | 19 | 26.0 |
| 11-15 | 4 | 5.5 |
| 16-20 | 2 | 2.7 |
| Above 20 | 18 | 24.7 |

* 1. **Level of awareness of cost planning methods**

The first objective of this study is to evaluate the Nigerian Quantity surveyors’ level of awareness of cost planning methods, this analysis was carried out and analysed using mean item score which was then ranked for easy interpretation. The finding of this analysis is shown in Table 3.

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| **Table 3: Level of awareness of cost planning methods** |
| **Cost Planning Methods** | **Mean** | **Rank** |
| Elemental Cost planning | 4.77 | 1 |
| Unit cost method | 4.75 | 2 |
| Comparative Cost planning | 4.71 | 3 |
| Superficial method | 4.66 | 4 |
| Cubic method | 4.55 | 5 |
| Life cycle costing | 4.52 | 6 |
| Cost-benefit analysis | 4.34 | 7 |
| Functional method | 3.93 | 8 |
| Least Cost | 3.82 | 9 |

From Table 3, it can be seen that elemental cost planning method has the first ranking with a mean of 4.77. On this basis, it can be said that elemental cost planning method is the most popular method of cost planning. It is seconded by the unit method with mean score of 4.75, whilst the comparative method is 4.71, superficial 4.66 and cubic method 4.55 being 3rd 4th and 5th respectively. The least cost method is ranked the lowest based on the result obtained. Using an adopted mean value range of ‘‘1-1.49 = Not at all aware, ‘‘1.50-2.49 = slightly aware’’, ‘‘2.50-3.49 = somewhat aware’’, ‘‘3.50-4.49 = moderately aware’’, ‘‘4.50-5.00 = extremely aware’’, it can be said that Nigerian Quantity surveyors are extremely aware of all the cost planning method considered except cost benefit analysis, functional method and least cost method which indicated moderate awareness. The outcome of this investigation negates the findings of Kissi et al. (2016), who discovered that Ghanaian Quantity surveyors has weak knowledge of cost planning.

* 1. **Frequency of use of cost planning methods**

The second objective of this study is to examine the Nigerian Quantity surveyors’ frequency of use of cost planning methods, this analysis was carried out and analysed using mean item score which was then ranked for easy interpretation. The outcome of this investigation is shown in Table 4.

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| **Table 4: Frequency of use of cost planning methods** |
| **Cost Planning Methods** | **Mean** | **Rank** |
| Elemental Cost planning | 4.81 | 1 |
| Unit cost method | 4.56 | 2 |
| Comparative Cost planning | 4.53 | 3 |
| Superficial method | 4.30 | 4 |
| Life cycle costing | 4.07 | 5 |
| Cost-benefit analysis | 3.85 | 6 |
| Cubic method | 3.62 | 7 |
| Functional method | 3.37 | 8 |
| Least Cost | 3.36 | 9 |

From Table 4, it can be seen that elemental cost planning method has the first ranking with a mean of 4.81. On this basis, , it can be said that elemental cost planning method is the method mostly utilized for planning of proposed project by the Nigerian Quantity surveyors. It is seconded by the unit cost method with mean score of 4.56, whilst the comparative method is 4.53, superficial 4.30 and Life cycle costing 4.07 being 3rd 4th and 5th respectively. The least cost method is ranked the lowest based on the result obtained. Using an adopted mean value range of ‘‘1-1.49 = never used, ‘‘1.50-2.49 = rarely used’’, ‘‘2.50-3.49 = sometimes used’’, ‘‘3.50-4.49 = often used’’, ‘‘4.50-5.00 = frequently used’’, it can be said that Nigerian Quantity surveyors frequently use elemental cost planning, unit cost method and comparative cost planning methods. Superficial method, life cycle costing, cost benefit analysis and cubic method of cost planning were often used while functional method and least cost method were sometimes used. The result of this analysis supports the results of Ernest et al. (2017) conducted in the Ghanaian construction industry. It however negates the report of Nwachukwu (2003), who noted that cost planning application is absent in the Nigeria project management system to a large extent.

* 1. **Correlation between the level of awareness and frequency of use of cost planning by Quantity surveyors in the Nigerian Construction Industry**

The results of the research revealed the level of awareness of cost planning methods and the frequency of use on construction projects in Nigeria. Additionally, the study aims to determine whether there is a correlation between the results of the level of awareness and the frequency of use, this fulfils the third objective of the study.

This test is being conducted to ascertain if the level of awareness about cost planning has any bearing on how frequently they are used.

Spearman correlation test with *p* ≤ 0.05 was conducted for this analysis. The rule for interpretation of the test states that when the *p*-value > 0.05, then there is no relationship between the variables, but when the *p*-value ≤ 0.05, then there is a relationship between the variables tested. The outcome of the analysis is shown in Table 5.

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| **Table 5: Spearman’s correlation test between the level of awareness and Frequency of Use of Cost Planning Methods** |
| Variables correlated | Total Awareness Level | Total Frequency of Use |
| Total Awareness Level | Correlation Coefficient | 1.000 | .485\*\* |
| Sig. (2-tailed) |   | .000 |
| N | 73 | 73 |
| Total Frequency of Use | Correlation Coefficient | .485\*\* | 1.000 |
| Sig. (2-tailed) | .000 |   |
| N | 73 | 73 |
| \*\*. Correlation is significant at the 0.01 level (2-tailed). |

Spearman’s correlation coefficient was used to analyze the relationship between the frequency of use and awareness level of the cost planning approach. In order to confirm that the assumptions of normality, linearity and homoscedasticity were not violated, preliminary analyses were carried out.

According to the result in Table 5, there is a moderately positive relationship between the variables mentioned, with a high level of knowledge of cost planning methods being correlated with a higher frequency of usage of the methods (rho= .485, n= 73, ρ ˂ .0005). The implication of this is that as Nigerian Quantity surveyors are becoming more aware of the cost planning methods, the more they use it in cost planning of proposed projects.

1. **Conclusions and Recommendations**

The presence of cost planning methods/techniques in construction economics and construction management related literatures is not in doubt. Its meaning is also very understandable however; paucity of its application in the construction industry necessitated this study. From the result, it can be said that the knowledge and application of cost planning methods by the Quantity surveyors in the Nigerian construction industry is to a greater extent commendable. Notwithstanding, despite this findings cost overruns, project abandonment and the likes is still rampant in the Nigerian construction industry as well as other developing nations. This could then imply that its application is in theory and not in practical.

This study recommend further research on barriers to actual practical implementation of cost planning methods in the Nigeria construction industry and also a case study research on a particular project(s) from inception to handing over which will reveal whether the cost method methods are applied or not, which methods is applied and what is the outcome of the project.

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