

FACTORS AFFECTING IMPLEMENTATION OF CONSTRUCTION COST MANAGEMENT TECHNIQUES IN GOMBE STATE NIGERIA

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ABSTRACT

Cost Management is necessary to ensure that the anticipated project is designed and developed within the projected cost to ensure value for money. Several factors affect cost management of construction projects which include poor leadership and inappropriate management, inefficient deployment of resources, excessive wastage of materials on sites, complex payment mechanisms, theft of materials on sites, and variation during construction works. This research aims to investigate factors affecting the implementation of construction cost management techniques in Gombe, to improve on cost management techniques in the Nigerian construction industry. The study employs a quantitative research paradigm through descriptive design. Questionnaires were used to collect data from experienced construction professionals from Gombe-Nigeria and analyses were conducted using SPSS Version 22, by testing Mean Ranking of the identified factors. 115 valid responses, corresponding to 72% response rate were used for analysis. The result revealed that, incorrect planning is the main factor affecting implementation of cost management techniques. This is followed by the fluctuation of price of materials, additional cost and economic instability. This implies that proper scheduling is the key to utilizing project resources, if not, the project cost will increase. It is therefore recommended that building project should adhere to cost management techniques has identified to improve cost effectiveness in the Nigerian Construction Industry.

Keywords: Nigeria, construction cost, Management techniques

INTRODUCTION

Cost Management is the process by which costs (expenses) incurred on a project are formally identified, approved and paid. Cost management is the deliberations, actions and reactions to project cost fluctuations during a project to maintain the project cost within the project budget (Olaoluwa, 2013). Cost management is the process of controlling the expenditure on a construction project at all stages from initiation to completion, within the approved budget (Young & Ibbs, 2002) Cost performance is a measure of efficiency expenses most construction projects are usually plagued with cost overruns which occur when the resultant cost target exceeds cost limit of a project. Cost overruns are caused by delays during construction, poor project management, poor cost control, wastage of resources or materials, variations, inflation just to state a few (Adeyemo, 2013). According to Anuranjan Kumar et al (2015) signifies that despite the availability of various control techniques and project control software many construction projects still do not achieve their cost and time objectives. In order to reduce the occurrence of this phenomenon and to also provide value for money for the client, cost management has to be applied to the entire project cost not construction costs alone starting from the very inception of the project and then throughout the execution of the project to the end in order to ensure that the best results are achieved in terms of cost, quality and value. Oladapo (2014) identified effective and efficient cost management as a critical success factor in the execution of a project. Cost management simply means the controlling measures that can be taken to ensure that the contract sum of the project is not exceeded. Cost management aims at providing high quality services and products at a value fair to both parties. Its main goal is to evaluate the techniques which will be used to give services and products with higher value for consumers at a lower cost (Writer, 2010). Cost management involves the use of techniques and processes such as cost planning, cost checking, cost control, cost reporting, cost analysis, cost-

benefit analysis, value management, life-cycle costing (Vester, 2013).

Olujide and Owoshagba (2010) observed that techniques such as comparing estimates to client's budget, adoption of sound tendering techniques, cost planning, cost modelling, unit costing, Program Evaluation and Review Technique (PERT), costing to design, building cost index are being used to manage cost overrun in the construction industry.

A lot of techniques have evolved over the years and Hanid et al. (2011) observed that in the new millennium, techniques such as project management, tendering, cost data, earn value analysis (EVA), cost benefit analysis and risk management are being used but also stated that more emphasis has been placed on life cycle costing, estimation, cost control, cash flow in this period. Olawale and Ming (2010) also identified PERT, earned value analysis, standard costing, profit or loss at valuation dates, cost-value reconciliation, overall profit or loss as techniques used for the control of project cost. Other techniques that have evolved include just -in-time technique, target costing.

Ideally, cost management practice is the process of planning, estimating, coordinating, controlling and reporting of all cost-related aspects from project initiation to operation, maintenance and disposal (Horngren et al., 2015). According to Luu et al. (2010), the cost management practice/system consists of a set of principles, methods and tools whose main objectives are to cost and generate information in order to support different managerial decisions during the distinct phase of a project. As viewed by Kim (2016), particularly in the construction industry, cost management practice must include the processes required to ensure that the project is completed within the approved budget.

Cost management, sound tendering techniques and estimation are the most commonly used techniques. The adoption of modern cost management techniques such as PERT, EVA, life cycle costing, target costing, Monte-Carlo simulation, etc. has been very minimal (Olujide & Owoshagba, 2010; Bari,2008).

A lot of research has been carried out in order to identify or propose techniques which can be used to reduce cost but there is a lack of literature on how effective these techniques are in the Nigerian construction industry. This has necessitated the need for this research.

The aim of this study is to investigate factors affecting implementation of construction cost management techniques in Gombe state, with a view to improving on cost management techniques in Nigerian construction industry. In view of the above the study outlined the following objectives:

- i. To identify construction Cost Management techniques used in Gombe State.
- ii. To assess the frequency of applying construction cost management techniques on building project in Gombe State.
- iii. To assess the factors affecting the implementation of construction cost management techniques in building project in Gombe State.

Research Questions

- i. What are the construction Cost Management techniques used in Gombe State?
- ii. What is the frequency of applying construction cost management techniques in building project in Gombe State?
- iii. What are the factors affecting the implementation of construction cost management techniques in building project in Gombe State?

LITRETURE REVIEW

Construction Cost Management

The quantity surveyor is the recognized professional within the construction industry as the cost and value consultant (Ashworth & Hogg, 2007). He is seen as the financial manager of the construction industry. The quantity surveyor has the responsibility of providing accurate and timely cost advice throughout the duration of a project to a variety of organizations including the client and the architect (Cartlidge, 2009). According to Iyorter (2006), the quantity surveyor adds value

to the built environment by monitoring the function of cost, time, quality and performance in building and engineering projects on many scales.

The clients of the construction industry are primarily concerned with quality, time and cost and yet majority of construction projects are procured on the basis of two of these parameters, time and cost (Bennett & Grice, 1990) as cited by Bowen et al (1999). Over the years there has been a growing demand by the clients for quantity surveyors to demonstrate added value. The clients are pressurising the industry for one-stop shop services, coupled with cost and time certainty in the delivery (Royal Institute Chartered Surveyors, 2002). The quantity surveyor is faced with the task of ensuring that the services that he renders provides or gives his clients value for their money.

Cost Management Techniques in Nigerian Construction Industry

In order to carry out cost management, tools and techniques are being used. These techniques are applied in order to aid or carry out the processes earlier mentioned. The QS makes use of a range of procedures, technical tools and techniques in order to manage and control cost of construction projects. Over the years, cost management techniques have evolved. The techniques have moved from the use of approximate estimating techniques, cost value reconciliation, S curve, cost-in-use, break even analysis e.t.c to modern techniques such as Program Evaluation Review Technique (PERT/Cost), Earned Value Analysis (EVA), risk cost management, network cost modelling, Monte Carlo simulation (Rodriguez ,2011; Chitkara,2009; Chandra,2006; Bent & Humphrey,2007; Warren,2009).

Factors affecting implementation of cost management techniques in Nigerian construction industry.

Incorrect Planning

Successful projects delivery are products of constructive construction planning and schedules put in place ahead of time. PMBOK, 2013 reported that planning remained one of the major duty of project management. Recently, there was a grown concern that construction schedules are irrelevant to the daily running of construction projects. The major task of management is on project planning, but it is more challenging to implement and properly keep these plans to work.

Poor planning implementation leads to a requirement to make up lost time by an unplanned compression of the schedule, which happens in the majority of projects. Construction project necessitate proper planning to successfully manage both the human and material resources. In view of this, Mawdesley, 1997 maintained that there are various tasks, duration and cost restraints associated with construction project which need necessary attention and careful planning ahead of building production process.

Wrong Method of Estimation

The choice of estimate depends on several factors such as the end-use of the estimate, the amount of time and money available to prepare the estimate, the estimate tools, the available data, the project definition, and the project timing (Seeltese & Ladzani, 2012). According to Flyvbjerg et al. (2002), technical, economical, physiological and political factors are considered as explanation for inaccurate cost estimates.

Technical: This is commonly referred to as a forecasting error. This type of error encompasses imperfect techniques, incomplete data, mistakes, errors in future forecast and inexperience on the side of forecaster.

Economical: This error is explained in terms of both self-interest and public interest. The engineer and construction company interest in the likelihood of the project being built prompts the rational for an increase in revenue and profit, while public interest provides public officials with incentives to cut costs and save public funds. This explanation would be regarded as deceptive as most public

regulations forbid misleading information.

Physiological: This touches on the mental state, psyche, and bias appraisal of the project stakeholders due to the optimistic plans of the promoters about the successful outcome of the project. Flyvbjerg et al. (2002) indicated a problem with the physiological explanation; however, they concede that appraisal optimism would be a credible explanation of underestimation if the estimate were produced by an inexperienced forecaster. It was concluded that appraisal optimism is deceptive.

Political: This error factor ascribes interests and power to a political explanation for underestimating cost. The question of deception is further raised in relation to legal, economic and moral reasons. According to Flyvbjerg et al. (2002), forecasters or promoters are not likely to admit to a researcher or others that they have intentionally fabricated the estimate for a project to proceed.

Fluctuation of prices of materials

Omoriege and Radfort (2005) surveyed contractors, consultants and public clients and revealed price fluctuation as the most severe cause of project cost escalation in Nigeria. This could be attributed to the limitation in exchange rate which in turn affects construction materials prices and the general price level. Another factor is the unstable inflationary trend in Nigeria which is a result of demand exceeding supply, creating a scarcity of goods which in turn leads to escalation of the goods.

Absence of Construction Cost Data

Absence Construction cost data can be one of the most tedious steps to get a project off the ground, but it's a job you don't want to skimp on. Unrealizable estimate, weather for cost, scope or time, are among the largest reasons why project don't deliver their objectives. We've heard of projects that end up going way over their original estimates. It's a huge source of frustration for stakeholders and project managers alike. It can harm your company's credibility or even create a sense of distrust among management and project leaders (Dave, 2019).

Additional Cost

In examining the factors that influence the cost of projects, Doloi (2013) proposes factors which critically impact on project cost as project planning and monitoring, design efficiency, effective site management, communication, contractor's efficiency, project characteristics, due diligence, and market competition. As projects commence, the prices rarely remain constant as some factors necessitate changes in cost during different stages of the project (European Commission, 1998). Ponte (2009) suggests several factors to be considered when preparing construction cost estimate to include fluctuation of cost, traffic conditions, restrictive work hours or method of work, small quantities of work, separated operations, handwork and inefficient operations, accessibility, geographic location, construction season, and material shortage.

Project Financing

Typically used for funding public and private capital-intensive facilities and utilities, project finance (PF) is an economically significant growing financial market segment, but still largely understudied. Esty and Sesia (2007) report that a record \$57.8 billion in PF funding was arranged in Western Europe (W.E.) in 2006, which compares with \$35.0 billion invested in the United States (U.S.) – record \$328 billion in PF funding was globally arranged in 2006, a 51.2% increase from the \$217 billion reported for 2001. In 2014, \$54.1 billion and \$60.2 billion were arranged in W.E. and the U.S., respectively – \$260 billion was arranged worldwide during 2014. According to Thomson Reuters, in comparison with other financing mechanisms in W.E., as well as in the U.S., the PF market was smaller than both the corporate bond and the asset securitization markets in 2014. However, the amount invested in PF was larger than the amounts raised through IPOs or venture capital funds, which indicates that the financial crisis has had a small impact on the financing of large infrastructures and still represents a promising segment of global lending activity.

Nevitt and Fabozzi (2001) present PF as the process of financing 'a particular economic unit in which a lender is satisfied to look initially to the cash flows and earnings of that economic unit as the source of funds from which a loan will be repaid and to the assets of the economic unit as collateral for the loan'. Thus, the funding does not depend on the reliability and creditworthiness of the sponsors and does not even depend on the value of assets that sponsors make available to financiers. In this line of reasoning, Gatti (2008) refers to PF as 'the structured financing of a specific economic unit that the sponsors create by means of share capital, and for which the financier considers cash flows as the source of loan reimbursement, whereas project assets only represent collateral'.

Lack of Project Monitoring Effectiveness

Project monitoring effectiveness involves routine check carried out in order to track the key elements of project implementation performance activities through record keeping and regular report. It includes assessment of an on-going or completed project to determine its actual impact against the planned impacts in relations to its design, implementation and results (Wanjala 2017). From the definition above, monitoring is seen as a process that provides information and the application of such information helps the management professionals to effect the implementation of project and also assert their impacts; while control measures compares and effects corrective actions. It aims at determining whether the intended objectives have been met or not. On the other-hand, implementation is the process of putting a decision or plan into action or execution of a building process after all have been adequately figured out according to fact check and figures available in line with the objectives of the building production and projects.

Economic Instability

The stability inside an economic system can be defined as the natural state in which the potential of the economy is maximized, the price system tensions are weak, and the economic development follows a tangentially growing line. We can therefore define the instability as the economic system unnatural state that: weakens the development potential, induces tensions within the price system, and imposes a cyclical character to the economy, with a tendency to depression if the instability is becoming persistent. The stability is the natural condition of economic systems; the unstable state is a suffering condition for an economic system, unfortunately widespread for the behaviors (repeated human errors) contrasting a consistent development.

The unstable state of the economy differs from the stable economy scenario for the phenomena, autonomously developed, caused by the systems natural tendency to the stability. Therefore, events such as inflation, deflation and the cyclic motion of the economy, reasonably are to be considered as natural emanations occurring with the concrete goal to bring the systems back to normality (Giovanni, 2016).

Fraudulent practice and Kickback.

The Federal Government's National Economic Empowerment and Development Strategy in Nigeria (NEEDS) stressed fighting fraudulent acts (NPC, 2004). The NEEDS also has as one of its policy trust to "develop and maintain adequate/appropriate infrastructure." (NPC, 2004). In its bid to escalate the combat against fraudulent acts in infrastructural development, the Federal Government of Nigeria ordained laws and installed many institutions which include; the Independent Corrupt Practices and other Related Offences Commission (ICPC) Act 2000, the Economic and Financial Crimes Commission (EFCC) created by the EFFC Act 2004 and the Bureau of Public Procurement established through the Public Procurement Act, 2007. Other establishments are the Nigerian Extractive Industry Transparency Initiative (NEITI) established through NEITI Act 2007 and the Freedom of Information Act of 2011, concerned with the crumbling infrastructure facilities in Nigeria also, the Federal Government of Nigeria approved a National Integrated Infrastructure Master plan on 2nd November 2012 (Usman, 2013).

Duration of Contract period

Duration of contract period is the period which a contract is effective, this can also be understood as the period between the contract effective date and the contract end date- both of which are typically outlined within a contract and will be agreed to by both parties. Establishing the contract duration is important as there's no certainty around when contract obligations will begin and end without it.

Supplier Manipulation

The major reasons for this factor as observed by Manavazhi and Adhikari (2002) are monopoly control of the market by some suppliers, work stoppages in factories, lack of industrialized materials, fluctuating demands forcing suppliers to wait for accumulation of orders and difficulty in importing raw materials from other countries.

RESEARCH METHODOLOGY

The study objectives entailed exploration of literature to identify factors affecting implementation of cost management techniques in the Nigerian construction industry, Nigeria. The literature reviewed were used to design a structured questionnaire to get the opinion of construction professionals on cost management techniques. Thus, this study adopted descriptive designs for all its objectives. The study will be conducted in Gombe State of Nigeria. Gombe metropolis is the administrative and political headquarter of Gombe State. It is located in the north eastern geopolitical zone of Nigeria. The population of the study comprised of construction professionals registered with regulatory bodies overseeing the activities of members under their body and certified by the Nigerian government to practice. As core building procurement professionals saddled with the management construction projects. These constituted a range of building professionals including: Architect, Builders; Construction Managers, Engineers, and Quantity Surveyors (Ekundayo *et al.*, 2013). The study used an accessible population of 160 construction professionals that are identified to be involved in construction project. The accessible population serve as the study sample frame. From a sample frame of 160 construction professionals, this study arrived at a sample size of 115 using Krejcie and Morgan (1970). The advantages of the Krejcie and Morgan Table is that it gives very high sample sizes for small to medium sized population and as such, the bigger the sample, the better the representation of the population, and the more accurate the research result (Dawson, 2002; Sambo, 2008; Guthrie, 2010). The heterogeneous nature of the study population makes it impossible to apply simple random sampling. Thus, study adopted a convenience sampling technique so as to access the respondents that are available at the time of the study and reflects the proportional distribution of the population (Dawson, 2002; Sambo, 2008).

RESULT AND DISCUSSION

One hundred and sixty questionnaires. The distribution yielded 115 valid responses which represents 72% response rate. Seventy-one percent of the respondents have 11 years and above experience in the industry. In summary, the respondents have an average of nearly 11 years' experience in the construction industry. These results revealed that the respondents are qualified and experienced to respond to an enquiry of this nature

Respondents Demographic Information

Table 1 shows respondent's demographic information. The study respondents are building professionals who use their trades in the two sides of the Nigerian economy: public (33.9%) sector and the private (48.7%). Almost all the respondents are management staff in their respective organizations (97.4%): top management (17.4%), middle management (50.4%), lower management (22.6%), trade supervisor (7%) and others (2.6%). Their highest educational

qualification is either Certificate (1.0%), National Diploma (3.0%), Higher National Diploma (8%), Postgraduate Diploma (7.0%), Bachelor of Science/Bachelor of Technology (51.3%), Master of Science (30.4%), or Doctor of Philosophy (0.0%). The respondent's specialized in: Architecture (11.3.0%), Building (13.9%), Construction Management (9.6%), Quantity Surveying (51.3%), Engineering (9.6%), and Others (4.3%). These result show that the respondents are educationally qualified and are core construction professionals involve in the management of construction projects (Inuwa, 2014). The professionals are certified members of their respective regulatory bodies: ARCON (9.6%); CORBON (7.8%); COREN (11.3%); QSRBN (40.9%); and others (30%). These result reveals that virtually all the respondents are professionally certified to practice their respective construction professions, and as such, assists the study in ensuring that all the variables that may have an influence on the correctness of the data have been analyzed. By implication, this ensures that the respondents used for the study are appropriate sample (Pallant, 2011; Ekundayo *et al.*, 2013).

Table 1 Respondent's demographic profiles

Economic Sector	No.	%	Cumulative
Public	39	33.9	72.9
Private	56	48.7	111
Both	20	17.4	37.4
Total	115	100	100
Educational qualifications	No.	%	Cumulative %
Certificate	1.2	0.5	1.7
National Diploma	3.5	3.0	6.5
Higher National Diploma	9.2	8.0	17.2
Post Graduate Diploma	8.1	7.0	15.1
B.Sc./B.Tech.	58.7	51.3	110
MSc.	34.9	30.4	65.3
PHD	0	0.0	0.0
Total	115	100.0	100.0
Professional Affiliation	No.	%	Cumulative %
Architecture	13	11.3	24.3
Building	16	13.9	32.42
Engineering(Civil, Electrical & Mechanical)	11	9.6	20.6
Construction Management	11	9.6	20.6
Quantity surveying	59	51.3	100
Others	5	4.3	
Total	115	100.0	
Professional registration	No.	%	Cumulative %
ARCON	11	9.6	22.41
CORBON	9	7.8	31.03
COREN	13	11.3	79.31
QSRBN	47	40.9	94.83
Others	35	30.4	100
Total	115	100.0	

Factors that Constitute Unethical Professional Practices in Tendering Stage

3 Identify Construction Cost Management Techniques Used in Gombe State.

The results in table 5 reveal that cost reporting ranked first among construction cost management techniques with highest mean value 4.27, which indicate construction professionals are aware of the effectiveness of the factor. This is followed by the Variance Analysis with a mean value of 3.90,

Cost Value Reconciliation with a mean value 3.76, Estimating and Budgeting has a mean value of 3.70, Cash flow Analysis has a mean value of 3.35 and Management of project Resource has a mean value of 3.26 respectively. This result implies that Cost Reporting is mostly used by construction professionals as construction management techniques. Also, Variance Analysis is second most widely used cost management technique in construction project. Cost Value Reconciliation is an effective cost control tools used in construction project.

Table 2 construction cost management techniques used on construction project.

Factors	N	Minimum	Maximum	Sum	Mean	Std. Deviation
Cost Reporting	115	1	5	491	4.27	1.054
Variance Analysis	115	1	5	449	3.90	1.24
Cost Value Reconciliation	115	1	5	432	3.76	.942
Estimating and Budgeting	115	1	5	425	3.70	1.036
Cash flow Analysis	115	1	5	385	3.35	1.124
Management of project Resource	115	1	5	374	3.26	1.034

This result concurs with the findings of Paulson, (1976); Fabrycky & Blanchard, (1991). Cost reporting has the ability to influence cost decreases continually as the project progresses, from 100% at project conceptualization, to typically 20% or less by the time construction commences. Factors ranked to be least significance include; Cash flow Analysis and Management of project Resource.

Assess the Frequency of Applying Construction Cost Management Techniques on Building Project in Gombe State.

The results in table 6 reveal that cost reporting ranked first among frequency of applying construction management techniques with mean value of 4.43. This is followed by the variance analysis with a mean value of 4.15, cost value reconciliation with a mean value 3.95, estimating and budgeting has a mean value of 3.90, cash flow analysis has a mean value of 3.60 and management of project resource has a mean value of 3.60 respectively. This result implies that cost reporting is mostly used by construction professionals as construction management techniques. Also, variance analysis is second most widely used cost management technique in construction project. Cost value reconciliation is the third most used cost management techniques.

Table 3 frequency of applying construction cost management techniques on construction project

Factors	N	Minimum	Maximum	Sum	Mean	Std. Deviation
Cost Reporting	115	1	5	509	4.43	.909
Variance Analysis	115	1	5	477	4.15	.966
Cost Value Reconciliation	115	1	5	454	3.95	.916
Estimating and Budgeting	115	1	5	448	3.90	1.021
Cash flow Analysis	115	1	5	414	3.60	.962
Management of project Resource	115	1	5	408	3.55	.984

This result concurs with the findings of Kuehn, (2011).cost reporting will evolve through the life of the project, developing in detail and accuracy as more information becomes available about the nature of the design, and then actual price are provided by specialist contractors and suppliers, and actual cost incurred. Factors ranked to be least significance include; cash flow analysis and management of project resource. The second most significant factor affecting variance analysis according to Robert, (1993) cost, schedule and time variances and integration presents detailed

equations that describe parallel hierarchical cost and schedule control systems that calculate cost, schedule and time variances at different levels of details. Andawei, (2014) variance analysis ensure cost and time compliance of all project activities. The comprehensive status framework provided by the variance and earn value analysis.

To Assess the Factors Affecting the Implementation of Construction Cost Management Techniques in Building Project in Gombe State.

The results in table 7 reveal that incorrect planning ranked first among challenges facing implementation of cost management techniques with mean value of 4.37. This is followed by the fluctuation of price of materials with a mean value of 4.04, additional cost with a mean value of 3.89, economic instability has a mean value of 3.83, absence of construction cost data has a mean value of 3.80 and lack of project monitoring effectiveness has a mean value of 3.79, Fraudulent practices and kickbacks has a mean value of 3.77, Duration of contract period has a mean value of 3.71, Project financing has a mean value of 3.69, Supplier manipulation has a mean value of 3.65 and Wrong method of estimation has a mean value of 3.64 respectively. This result implies that incorrect planning is the most challenges facing the implementation of cost management techniques in Gombe state. Also Fluctuation of prices of materials is second most challenges facing the implementation of cost management techniques, and Additional cost is the third most challenges facing the implementation of cost management technique

Table 4 Factors affecting the implementation of construction cost management techniques in building project

Factors	N	Minimum	Maximum	Sum	Mean	Std. Deviation
Incorrect planning	115	1	5	503	4.37	.941
Fluctuation of prices of materials	115	1	5	465	4.04	1.055
Additional cost	115	1	5	447	3.89	.989
Economic instability	115	1	5	441	3.83	1.116
Absence of construction cost data	115	1	5	437	3.80	1.036
Lack of Project monitoring effectiveness	115	1	5	436	3.79	1.039
Fraudulent practices and kickbacks	115	1	5	433	3.77	1.071
Duration of contract period	115	1	5	427	3.71	1.076
Project financing	115	1	5	424	3.69	1.021
Supplier manipulation	115	1	5	420	3.65	1.076
Wrong method of estimation	115	1	5	419	3.64	1.028

From the result, incorrect planning is the main factor affecting implementation of cost management techniques. This result concurs with the findings of Chitkara (2012) and Chandra (2009) In ability of the project team to develop and implement a comprehensive plan, failure of the project team to revise the plan when major changes have been identified and incorporate the new changes into the scope of work, inability of project owner (or his representative) or the project financier to financially support the project, or provide financial support as at when due, and the failure of project team to reconcile the difference that may arise from conflicting interpretation of the project plan and goals between various stake holders in the project are the major causes that lead to failure of project plan that may have been well formulated. The second most significant factor Fluctuation of prices. This results concur with the findings of Ali and Kamaruzzaman (2010), Cantarelli et al. (2012) and Flyvbjerg (2007, 2008, 2011, 2014, 2016) see cost variability, perhaps caused by fluctuations in resource prices, and changes to work scope, as poor practice resulting from faulty professional methods and deceptive conducts. Fluctuations in prices of construction material, pre-contract budget and outturn costs, implying surges in budget estimates and overruns can be traced to fluctuations in prices. Additional costs according to Mbachu and Nkado (2004) have obvious

negative implications for the key stakeholders in particular, and the industry in general. To the client, high cost implies added costs over and above those initially agreed upon at the onset, resulting in less returns on investment. To the end user, the added costs are passed on as higher rental / lease costs or prices. To the consultants, it means inability to deliver value - for - money and could tarnish their reputation and result in loss of confidence reposed in them by clients. To the contractor, it implies loss of profit through penalties for non- completion, and negative word of mouth that could jeopardize his/her chances of winning further jobs, if at fault.

DISCUSSION

Objective 1: Identify Construction Cost Management Techniques Used In Gombe State: from the results obtained, This study identified cost reporting as critical to project success, and to the success of all of the clients, contractors and subcontractors involved with delivering the project. At the end of the day, all construction companies are running business, which need to generate a profit from their operations, at least in the medium to long term. Construction projects cost a lot of money, and they involve a number of internal and external forces, so cost reporting is one of the most powerful tools companies have to ensure that they are running a viable ship. With no cost reporting (or poor cost reporting), a construction companies is essentially running blind after making an initial projection or prediction as to what a project was going to cost. This is what results in scary project overruns and end of project headaches. No matter how good a company is at forecasting the costs of a project or estimating their budget at completion, they will come across variations and other disruptors which shift throw this initial budget off track. Cost reporting enables a company to understand what's happening during the course of a project, to make informed decisions about how to improve, and to course correct and ultimately keep the project and business on track. (RICS guide, 2015)

Variance analysis is the second factor in cost management techniques used, the study shown that variance analysis is the study of comparing actual project results to what was planned or expected, this is a quantitative investigation of the difference between actual and planned behavior. This is in agreement with the Harold & Lindman, (2011) this is used to determining the cause and degree of difference between the baseline and actual performance and to maintain control over a construction project. Variance analysis is especially effective when you review the amount of a variance on a trend line, so that sudden changes in the variance level from month to month are more readily apparent. It also involves the investigation of these difference, so that the outcome is a statement of the difference from expectations, and an interpretation of why the variance occurred.

Objective 2: Assess the frequency of applying construction cost management techniques on building project in Gombe state: the study shown that cost reporting is the most used factor applied in construction cost management techniques and is in agreement with the RICS guide, (2015). Cost reporting informs the client in a construction project of the likely outturn cost of the construction project. The forecast of outturn costs may be expressed as a variance against a budget amount, or expressed in absolute terms. A cost report will record: all costs incurred at the date of the report, where they are **known** and can be **accurately valued** in accordance with the particular contract conditions; all costs incurred at the date of the report, where they are **known** and can be **estimated** in accordance with the particular contract conditions; the forecast of costs to be incurred as can reasonably be **foreseen** at the dat of the report and **estimated** in accordance with the particular contract conditions; and the risk allowances necessary as can reasonably be **foreseen** at the date of the report. A cost report prepared on a regular and frequent basis will afford the client and the project team the ability to control the outturn construction cost. Outturn cost is controlled by the recognition of cost changes incurred and planned implementation of future cost changes. Secondly **variance analysis** is used as a cost management technique to comparing actual project results to what was planned or expected, this is a quantitative investigation of the difference between actual and planned behavior.

Objective 3: To assess the challenges facing the implementation of construction cost management techniques in building project in Gombe town: The study discovered that incorrect planning is one of the most important factors that affect cost of construction. Contractors must be aware of all resources that he might need for any project. The contractors, also, should utilize all resources in an efficient manner. Proper scheduling is the key to utilizing project resources, if not, the project cost will increase. **Fluctuation of prices of materials** is another major factor supported by Omoregie and Radfort (2005) surveyed contractors, consultants and public clients and revealed price fluctuation as the most severe cause of project cost escalation in Nigeria. This could be attributed to the limitation in exchange rate which in turn affects construction materials prices and the general price level. Another factor is the unstable inflationary trend in Nigeria which is a result of demand exceeding supply, creating a scarcity of goods which in turn leads to escalation of the goods.

Additional work is related to design changes, which is due to lack of detailed briefing on the functional and technical requirements of the projects by the clients (Mansfield et al, 1994). **Fraudulent practices and kickbacks.** This factor was the second most important factor affecting construction cost in Nigeria as noted by Elinwa and Silas (1993). Hussein (1999) also noted that fraudulent practices and kickbacks occasioned by greed are perpetrated by some major players in the construction industry. The perpetrators of this act in the industry are predominantly found within the rank and file of contractors, consultants and public clients as evident from the report published by (TELL, 2002).

CONCLUSION AND RECOMMENDATION

Factors affecting implementation of construction cost management techniques, Based on the findings of this study, the survey responses were used to identify construction cost management techniques, frequency of applying those management techniques and identify those challenges facing the implementation of construction management techniques respectively.

The most challenging factor facing the implementation of construction cost management techniques is incorrect planning is one of the most important factors that affect cost of construction. Contractors must be aware of all resources that he might need for any project. The contractors, also, should utilize all resources in an efficient manner. Proper scheduling is the key to utilizing project resources, if not, the project cost will increase. Secondly is Fluctuation of prices of materials is another major factor supported by Omoregie and Radfort (2005) surveyed contractors, consultants and public clients and revealed price fluctuation as the most severe cause of project cost escalation in Nigeria. This could be attributed to the limitation in exchange rate which in turn affects construction materials prices and the general price level. Another factor is the unstable inflationary trend in Nigeria which is a result of demand exceeding supply, creating a scarcity of goods which in turn leads to escalation of the goods.

Recommendations

This study proffers the following recommendations in light of its findings:

- i. Much focus should be placed on the major factors affecting implementation cost management techniques in order to reduce the cost of construction cost, enhance construction performance and generate confidence within the construction industry. Quantity Surveyors should become more alive to their responsibilities as cost experts ensuring that they make use of correct estimation methods.
- ii. There should be thorough crosschecking of estimates based on updated price information in order to avoid any wrong estimation. Clients should clearly identify their requirements and needs, whether they are able to achieve them with their financial capability in order to reduce payment problems.

- iii. There should be proper coordination and communication among various parties working on the project in order to improve management, control problems and reduce any avoidable delay.

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