

Impact of Stakeholders on the Success of Project Cost Management in Construction Industry

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Abstract: The construction industry is all important and unavoidable to the economic development of most nations in the world, stakeholders as an individual or a group of individuals who are influenced by or able to influence a project. Project cost management is a method that uses technology to measure cost and productivity through the full life-cycle of enterprise level projects. In Nigeria construction industry, the impact of stakeholders on the success of project cost management is not well understood in creating greater awareness of the value that stakeholders provide for projects. The result of this is lack of proper build team with the right skills of project cost management leading to failure of projects. This study assesses the impact of stakeholders on the success of project cost management. A quantitative approach was adopted for this study with a well-structured questionnaire. The tools employed for data analysis were mean item score and relative importance index. The study finds out that strong relationship of stakeholders is necessary for project cost management success, since a project can be considered a temporary organization of stakeholders pursuing an aim together. It was therefore recommended that there should be an effective awareness of stakeholders on the success of project cost management.

Keywords: Construction Industry, Construction Stakeholders, Project Cost Management, Success.

I. INTRODUCTION

Project Cost Management is a professional capability and expertise in planning and controlling costs for a construction project as well as analyzing the potential of risks that potentially lead to swelling of construction costs (Young & Libbs, 2002). Allan (2010) confirmed that construction industry is important in all countries of the world since it helps to add the quality of life both through its architecture and also through the facilities it provide to users both internally and externally.

According to Potts (2018), Project Cost Management is the process which is necessary to ensure that the planned development of a project is such that the price for its completion provides value for money (VFM) and is within the limits anticipated. Project management institute (2013), confirmed that the processes involved in planning, estimating, budgeting, financing, funding and controlling cost so that the project can be completed within the approved budget.

In a study conducted by Shunnet (2008) reveals that project construction stakeholders need to organize themselves properly and identify their respective roles, the project risks and uncertainties, however for a better performance to provide an excellent service, stakeholders such as Quantity Surveyors, Architect and Engineers plays a major role among other professional involves in construction process within the built environment in terms of cost (Nissanka and Sepani, 2007).

Quantity Surveyor often refers to as cost economics is the recognized professional as cost and value consultant within the construction industry, they have the required knowledge and expertise, therefore shoulder with the responsibility of advising the client on cost implication that may arise during the design and overall control of the cost of construction project. The Engineers are all round professionals who can apply special skills and knowledge to make engineering work into practice, including advising clients on selection of suitable designs and materials. The role of Architect is to interpret the client's projects requirement into a specific design or scheme (Shunnet, 2008).

Therefore, in the Nigerian construction industry, the impact of stakeholders on the success of project cost management is not well understood. The result of this is lack of proper build team with the right skills to project cost management leading to failure of projects. In order to address this problem, this study sets out to assess "the impact of stakeholders on the success of project cost management" using Abuja as a case study. In a view to attain the aim of carrying out the research, the research revealed the following objectives which are: To identify and assess factors affecting success of project cost management: To identify and examine barriers to the success of project cost management: To examine possible strategies for improving success of project cost management. This research work covered the impact of stakeholders on the success of project cost management of construction industry in Abuja. The main target of the research work were construction professionals (Quantity Surveyors, Architect and Engineers) in the execution of construction projects in selected government agencies such as Federal Capital Development Authority (FCDA) and Federal Capital Territory Administration (FCTA) Abuja.

II. LITERATURE REVIEW

Construction Industry

The construction industry is often seen as a driver of economic growth especially in developing countries, the industry can mobilize and effectively utilize local, human and material resources in the development and maintenance of housing an infrastructure to promote local employment and improve economic efficiency (Anaman and Osie- Amponsah, 2007). The construction industry in the world is often perceived to be the life wire of its respective economy as it cuts across all aspects of human activities (Ayangade, 2009) and the Nigeria construction industry is not an exception to this. Its contribution ranges from enabling the procurement of goods and services to the provision of buildings and other infrastructure thereby providing employment opportunities to its labour force while contributing immensely to the Gross Domestic Product (GDP).

The construction industry is a significant contributor to the world economy. The products of this industry provide the necessary public infrastructures and private physical structures for many daily activities such as services, commerce, utilities and other industries. The industry is not only important for its finished product, but it also employs a large number of people (directly and indirectly) hence the effect on the economy of a country during the actual construction process (Wibowo, 2009). Similarly, Dlamini (2012) has also noted the strong relationship between the construction industry and economic growth, specifically in terms of the provision of capital infrastructure.

One of the most critical of all sectors in the economy of Nigeria even before the oil boom era surfaced is the construction industry and despite playing an important role in developing the nation economically; it has failed to achieve its initial set out goals as a result of challenges that had confronted the economy over the years (Amade *et al.*, 2015). Typically, there are a minimum of four or five parties directly involved with the process of a construction project such as clients, design consultants, contractors and material manufacturers or suppliers (Hatmoko, 2008). These parties have different levels of involvement and at different stages in the process.

Major Stakeholders in the Construction Industry

In a study conducted by Shunet (2008) it was revealed that project construction stakeholders need to organize themselves properly and identify their respective roles, the project risks and uncertainties. He further disclosed that there is need for recognition to establish effective lines of communication, which facilitates free flow of information throughout the duration of the project. The construction industry is client driven, and as such the level of awareness and adoption of sustainable construction by clients play a significant role in the implementation. Construction professionals form a group

of key stakeholders in achieving sustainable construction (Hakkinen and Belloni, 2011).

The three main project stakeholders according to shunet (2008) are as follows, the client; who is the initiator, multi-disciplinary construction consultants; who act as the client's professional advisors and a building contractor; who interprets the architect's design in the built environment.

I. The client

Being the initiator of the project implies that he is the main person who develops the construction idea (shunet, 2008). He undertakes a decision to build in the midst of the following environmental forces; political, social, technological, economical, educational, and legal and within a time scale. Thus, he starts by identifying the use potential or creating the need for the facility, this is through a feasibility study. Secondly, he sources the necessary financial resources for the capital and lastly he commissions various construction professionals to build to his ascertained requirements (shunet, 2008).

II. Architect

The role of an architect is to interpret the client's project requirements into a specific design or scheme (shunet, 2008). Design is a function of appearance, composition proportion, structure, and the economy of the product. In addition, the architect performs the function of obtaining planning permission for the scheme; He collects, coordinates, controls and disseminates project information to all project participants (shunet, 2008).

III. The Quantity surveyor

He is responsible for the studies of the economies and financial implications of a construction project and hence he becomes the appropriate professional to advise the client/architect on matters relating to the economies and cost of proposed construction project (shunet, 2008). A quantity surveyor comes second, soonest possible after the appointment of the architect, this is however as per the traditional system. The functions of a quantity surveyor according to shunet (2008) are: Preparation of the preliminary cost advice and approximate estimating, Preparation of cost plan and carrying out cost studies i.e. investment appraisal, life cycle costing and the like, Preparation of contract documentation for contractor selection and construction project administration, Evaluation of contractor's tenders received with recommendations for acceptance or rejections and Preparation of cash flow forecasts and institution of post-contract cost monitoring/reporting mechanisms.

IV. Engineers

Engineering consultants in a building process include; the structural engineer and the services engineers (shunet, 2008).

Structural engineer

He acts as an adviser to the architect on all structural problems; such as stability of the structure, suitability of materials proposed, structural feasibility of the proposed design and sizes of structural members for a construction project (shunet, 2008). As pertaining to the cost of a building, the structural engineer submits his drawings to the quantity surveyor who in turn prepares an estimate for the engineering work.

The Services Engineer

These are specialists in the following works; electrical, mechanical, heating, ventilation, air-conditioning, sanitation, lifts, escalators etc. (shunet, 2008). The main function of these engineers is to ensure that thermal and visual comforts are achieved effectively; for these reasons, they analyse the client's requirements, prioritise, and advise the architect on the most appropriate design solution (shunet, 2008).

Concept of sustainable building construction

The concept of sustainable construction (a subset of sustainable development) concerns the responsibility of the construction sector of creating the built environment in a sustainable manner (Pearce *et al.*, 2012). That is, in a way that is environmentally friendly, socially responsible and economically supportive. Sustainable construction is centered on the economic, social, and environmental impact of creating a usable structure. In other words, it requires all stakeholders (designers, professionals, contractors and the clients) to imbibe construction practices that will minimise the damages done to the environment. Constructing sustainable buildings reduces the use of raw materials and land, minimises the consumption of energy and water. It also reduces emissions, waste and pollution in the environment (McMahon *et al.*, 2015).

The main concept of sustainability focuses on the interaction between a given project: social, environmental, and the economic dimensions of the system enclosing it (Ramsbotton, 2013). It is evident that there is a relationship between promoting the concept of sustainability in one of its dimensions and its propagation to the other areas of sustainability. For example, practicing green construction (environmental sustainability), will result in savings in the operation cost on the long run (economic sustainability), and will enforce healthy work environment for the workforce (social sustainability) Ramsbotton (2013).

To be socially sustainable, the systems and processes proposed for executing a project should be contributing to the objectives of creating healthy, livable, equitable, diverse, vital, and sustainability-aware workforces and communities (Ramsbotton, 2013). Clear guidelines for social sustainability practice in construction projects should be stipulated and enforced. Such guidelines should dictate besides the ethical

and safe practice of construction, the accountability of day-to-day operations to respecting, caring, and improving the quality of living for the workforces as well as within the communities impacted by the project (Nielson and Thomsen, 2011). Khalil *et al.* (2011) defined sustainable development as a form of project that meets the needs of the present without compromising the ability of future generations. Adewunmi *et al.* (2012) described sustainable development as the line between environmental, economic, and social sustainability and the three factors are necessary for any true measurement of sustainability. Zeiler *et al.* (2012) informed that sustainability is a crucial issue for our future and professionals, especially architects and engineers involved in the design process, have an important influence on the practice. The same is also important for facility managers in the reduction of the built environment impact on the natural resources. Due to increasing environmental awareness and legislative pressures, facility management as a profession is required to play an active role in the environment. The idea of sustainability involves enhancing the quality of life, thus allowing people to live in a healthy environment, with improved social, economic and environmental conditions (Ortiz *et al.*, 2010).

A sustainable project is designed, built, renovated, operated or reused in an ecological and resource efficient manner (Ortiz *et al.*, 2010). An ideal project should be inexpensive to build, last forever with modest maintenance, but return completely to the earth when abandoned. Sustainable building approach is considered as a way for the building industry to move towards achieving sustainable development taking into account environmental, socio and economic issues, it is also a way to portray the industry's responsibility towards protecting the environment (Shen, 2010). Peter *et al.*, 2012 describe sustainable building as consisting of four principles: social, economic, biophysical and technical. Amongst the published work relating to the principles of sustainable building Sustainable building is considered as a way for the building industry to move towards protecting the environment.

Procurement Method

Ashworth and Hogg (2007) defined procurement method as the management of the total process involved in construction project delivery. It is also ways in which a client or a sub-client may procure a building or other construction work varied and complex. Molenaar *et al.* (2009) defined procurement method as a comprehensive process by which designers, constructors, and various consultants provide services for design and construction to deliver a complete project to the client. In addition, the last few decades have witnessed the proliferation of numerous different types of construction procurement for delivering projects.

The most common types include: Traditional Method (also known as Design, Bid and Build (DBB) approach), Design and Build (DB), Management Contracting, Construction

Management, Project Finance and Partnering. The complex nature of procurement selection and their subsequent management therefore pose great difficulties to clients and any failure to rise up to this challenge has often resulted in poor project performance. Such consequence has long been recognised by a number of researchers (Molenaar *et al.*, 2009).

Procurement systems are vital in ensuring the successful implementation of a construction project, precisely executed for all phases of any particular project. Procurement systems govern the delivery processes of a construction project in many ways and are the key in determining the success or failure of any particular project. Procurement systems have received well deserved attention in countries such as Australia, United Kingdom, United States of America, Japan and New Zealand, but this has never been the case locally as well as in many other African countries.

According to (Ashworth and Hogg, 2007), different variants of procurement are available for meeting different clients' needs and projects specifics. A procurement method determines the overall framework and structure of responsibilities for participants in a contract process and thus, a key factor contributing to overall project success.

However, it has been observed that many procuring entities' choice of procurement method is perfunctory and based largely on familiarity with a particular procurement method rather than an informed choice based on project needs assessment (Osanyinro and Aghimien, 2017). With the availability of diverse procurement methods, no single system best satisfies the needs of a client in all situations, or that of different clients in the same situation (Maizon *et al.* 2006). In developing construction projects, diverse methods of procurement have and continue to evolve. Aside the traditional method of procurement, other innovative methods is now being used by the construction industry worldwide, the procurement methods differ from each other, in terms of allocation of responsibilities, sequencing activities, process and procedure and organisational approach in project delivery (Oladirin *et al.*; 2013).

The use of these procurement methods are significantly affecting the performance of most projects, Erickson and Westerberg (2012) study postulate different procurement factors at the design, bid invitation, bid evaluation and sub-contractor selections stages that can have various influence on project performance. Oluwole (2015) asserts that the completion of the construction project within the agreed time, cost and quality depends on the type of procurement systems selected, hence the internal and external factors that influence the selection of a suitable procurement systems, clients level of knowledge or experience and control, funding means, political and social concerns, understanding of the system, size of the projects and technical complexity, quality and price certainty as well as risk allocation are internal factors

considered, whereas external factors that need to be adhered to when a procurement system is selected include: market competition, technology, natural causes and regulatory environment.

Factors affecting success of project cost management

One of the major hindrances to the development and implementation of sustainability strategies in the construction sector is poor awareness level. Elmualin, Valley and Kwawu (2012) asserted that managers who are responsible for charting the sustainability cause have little or no information about sustainability. Fear of the cost of implementing sustainability construction also inhibits the development of sustainability strategies in construction business. This includes the perception of higher investment costs, expertise of consultants, design completion, market condition, long payback period, client's fears about viability, poor knowledge of life cycle cost and difficult access to financial resources. (Alsand, Gale and Edwards (2011) Perceived high cost of undertaking sustainable construction is a barrier to its implementation. Higher costs of implementing sustainable construction maybe perceived as more expensive than the conventional construction because of increase in consultancy fee (Alsand, Gale and Edwards (2011).

Poor support from the government is also another factor influencing against the development and implementation of sustainability strategies, (Alsand, Gale and Edwards (2011) noted that intensive support from the government is required to implement sustainable construction. Dzokoto and Dadzie (2013) also asserted that sustainable construction will thrive if the government puts in legislations in place that will drive corporate sustainability in construction organizations. Successful implementation of sustainable construction requires government commitment.

Low demand of sustainable construction by client has also been identified as a factor influencing against the development and implementation of sustainability. Alsand, Gale and Edwards (2011), reported that low demand of sustainable construction by clients possess a great challenge in the implementation of sustainable construction.

Poor expertise for sustainable construction also inhibits the implementation of sustainable strategies. Dzokoto and Dadzie (2013) noted that unavailability of sustainable building materials, nonexistence of sustainability measurement tool and absence of exemplar demonstration projects are issues bothering around expertise for sustainable construction and these have negative implications for the implementation of sustainable construction.

Tang *et al.* 2019 identified critical success factors influencing sustainable building success such as: clear understanding of sustainable objectives, budget control, Market planning/business case for sustainability as sustainable objectives, risk management/long term consideration of

precaution and risk, competent team members, sustainable strategic technical planning, sustainable technical tasks feasibility, engaging the final and temporary users/ involving the community, monitoring/evaluating performance and feedback during project life cycle, communicating and coordinating sustainable opportunities and objectives across the stakeholder groups, training and education and project environment (nature, economic, social, political, business and technology).

Client influence the contractors and the professional firms both as internal and external factors, but the client has more impact on the professional organization than the contractors due to the fact that the professionals are more customer- focus than the contractors in practices. Many empirical studies (Chan & Liu, 2012; Bossnik, 2004; Gauthier & Wooldridge, 2012; Boxenbaum *et al.*, 2010) that examined the factors influencing the achievement of sustainable construction have affirmed the importance of innovative construction as a unique way of achieving sustainable construction, albeit in a conflicting way. Top management commitment and organizational goal and objectives are also identified as an internal factor, the reason why the practice of the use of sustainable building materials is low, according to the contractors is the value their organization place on environmental issues, their value is geared towards profit-making in accordance to Akadiri (2011). Ahn *et al.*; (2010) referred that the built environment has a major share of environmental impact of our society, along with transportation and industrial processes. It accounts for approximately 40% of total energy use. According to Ajayi *et al.*; (2012) the four most important external environmental factors in decreasing order include community issues, weather conditions, economic situation (boom or meltdown) and government policy.

Nigerian clients lack the awareness and education on sustainability issues as supported by Akadiri (2011). Chan and Liu, (2012) demonstrated how innovativeness is capable of influencing not only organizational productivity, profitability and competitiveness, but also a vital procedure in sustainability adoption in an organization. D'Incognito *et al.*, (2013), observed that organizational culture is the most significant barrier to the slow adoption of sustainable construction in terms of the Life Cycle Costing (LCC) and Life Cycle Assessment (LCA).

Barriers to the Success of Project Cost Management

Sustainable construction in most developing countries around the world has been characterised as poor. Studies have shown that the sustainability level in construction project being delivered in these developing countries is low (Alabi, 2012; Aje, 2016; Baron and Donath, 2016; James and Matipa, 2004). Several factors have been held accountable for this poor sustainable construction in these countries, and it is only through the understanding of these factors that effective

measures can be put in place to overcome them and achieve sustainable construction within the built environment. These factors have been described as barriers impeding the achievement of sustainable construction. Ayarkwe *et al.* (2017) stated that barriers have a negative impact on the implementation of sustainable construction practices and they can be internal or external factors.

Despite the success of sustainable construction and the green building movement in the developed countries of the world, Nigeria is still widely lagged behind but more entrenched traditional construction industry. However, in defiance of these recorded successes in sustainable construction technologies practices in the developed countries are still faced with some barriers to more widespread acceptance, development of sustainable construction in any country, the bottlenecks that hindered these practices have to be identified. Some of these include; team lack of general expertise, lack of clearly defined team members, absence of clear planning for project objectives, poor skills in scheduling and controlling, inaccurate planning for payment of contractors, complex project objectives and dislike or trust of control systems (Ojo, Mbowe and Akinlabi, 2014). William and Dair, (2012) identified lack of knowledge, understanding and information as the major barriers to the delivery of sustainable structures.

Strategies for improving project cost management

To improve sustainable practices in the industry, concerned stakeholders must take into consideration, build a project team with the right skills implementation of life cycle costing, training of local construction companies on sustainable methodologies, develop a planning and controlling process, develop a shared understanding between owner and contractor about control system and contract deliveries, develop a control system that is accurate and trusted, effective an analytical ability of project personnel, establish clear performance measures and creating awareness within the industry on benefits associated with sustainable construction (Aigbavboa *et al.*, 2017). Barriers preventing clients from committing to a sustainable design approach are presently surplus cost, a selective use of materials, as well as education into the pressing need for sustainability. This results in clients not willing to consider the environmental responsibility, and lack of enthusiasm from designers to advocate sustainable design (Eley, 2011). The higher educational background will enable clients to becoming better informed on the benefits of sustainable development/ design alternatives. This will consequently boost the client's awareness and thereby enhance level of acceptance. It will be eventually increase in demand for sustainable construction and cause a reduction in price of the sustainable construction materials and techniques (Yudelson, 2007).

III. MATERIALS AND METHODS

According to Creswell, (2003) that the factor to be considered in selecting the best research methodology should be the influence that such method has on the research problem and objectives. This research basically employed the use of survey design method using the quantitative approach through a well-structured questionnaire to assess the impact of stakeholders on the success of project cost management in Abuja, Nigeria. Quantitative research involves studies that make use of statistical analyses to obtain their findings (Marczyk *et al*, 2005). The target respondents for this study were the principal stakeholders in the construction industry namely: Architect, Quantity Surveyor and Engineers with a population size of 75 which was distributed within FCDA and FCTA in a random manner. The sample size consists of stakeholders which a census of the total members of the population (75) was carried out and 54 was retrieved.

The questionnaire was designed in a 5-point Likert’s scale format. All the data collected for this research were analyzed using descriptive method. **Statistical Package for the Social Science (SPSS)** is use in obtaining findings. The use of Relative Importance Index (RII) was adopted to identify and assess factors affecting success of project cost management in order to achieve objective 1. Mean Item Score (MIS) was used to identify and examine barriers to the success of project cost management and to examine strategies for improving success of project cost management to achieve objectives 2 and 3 using as shown in Table 3.1.

Table 3.1: Methods for Data Analysis

S/No	Objectives	Method of data analysis to be used
1	To identify and assess factors affecting success of project cost management.	Relative importance index
2	To identify and examine barriers to the success of project cost management.	Mean Item Score
3	To examine strategies for improving success of project cost management	Mean Item Score

Decision Rule

The decision rule adopted for the RII and MIS analyses are summarized in Table 3.2.

Table 3.2: Decision Rule for Data Analysis

SCALE	Cut-Off Point		Interpretation			
	RII	MIS	Level of severity	Level of Importance	Level of Significance	Level of Effectiveness
5	0.8 1 - 1.0 0	4.5 1 - 5.0 0	Very severe	Very Important	Very Severe	Very Effective
4	0.6	3.5	Severe	Important	Severe	Effective

	1 - 0.8 0	1 - 4.5 0				
3	0.4 1 - 0.6 0	2.5 1 - 3.5 0	Fairly severe	Fairly Important	Fairly Severe	Fairly Effective
2	0.2 1 - 0.4 0	1.5 1 - 2.5 0	Less severe	Less Important	Less Severe	Less Effective
1	0.0 0 - 0.2 0	1.0 0 - 1.5 0	Rarely severe	Least Important	Least Severe	Least Effective

Relative importance index

Relative Importance Index is being ranked from 0.00 to 1.00 and they all have their decision rule as shown in table 3.2 respectively.

The equation for Relative Importance Index (RII) is as follows:

$$\text{Relative Importance Index (RII)} = \frac{\sum W}{A \times N} \dots\dots\dots(3.1)$$

Where: Σ = Summation, W = the weights of every one of the factors given by respondents and it was in the range of (1 - 5), (A=5) the largest value of weight (i.e. Highest factor) and finally N refers to the Total number respondents.

Mean item score

Mean Item Score is being ranked from 1.00 to 5.00 and they all have their decision rule as shown in table 3.2. The formula for Mean item score (MIS) is as follows:

$$\text{MIS} = \frac{\sum W}{N} \dots\dots\dots(3.2)$$

Where: Σ = Summation, W = Weight, and N = Total

IV. RESULT AND DISCUSSIONS FROM THE REVIEWED LITRATURES

This section of the study reports the results of analysis carried out in pursuance of Objective One. Fourteen basic **factors affecting success of project cost management** identified through literature review was identified and ranked according to their level of importance through the use of Relative Importance Index (RII). The rate of response and the RII score are shown in Table 4.1

S/No.	Factors	RII	Rank	Decision
1	Expertise of Consultant	0.82	1st	very important
2	Design Completion	0.80	2nd	very important
3	Scope of Construction	0.76	3nd	very important
4	Project Duration	0.75	4th	very

				important
5	Method of Construction	0.75	4th	very important
6	Market Condition	0.74	6th	very important
7	Site Constraint	0.72	7th	very important
8	Number of Project Team	0.72	7th	very important
9	Type of Structure	0.71	9th	very important
10	Type of Client	0.70	10th	very important
11	Anticipated Variation	0.69	11th	very important
12	Buildability	0.68	12th	very important
13	Clients Financial Situation	0.67	13th	very important
14	Complexity of Project	0.64	14th	very important
	<i>Average</i>	<i>0.73</i>		very important

Table 1 reveal the relative importance index (RII) of factors affecting project cost management which shows that two (2) factors are very important such as “expertise of consultants” and “design completion” with RII value of 0.82 and 0.80 respectively but the most important factor affecting project cost management is expertise of consultants with RII of 0.82.

Ten (10) **Barriers to the Success of Project Cost Management** were identified through literature review and were ranked according to their level of severity using Mean Item Score. Mean Item Score (MIS) was used to analyze the data collected as shown in Table 4.2

S/No	Barriers	MI S	Ran k	Decisio n
1	Team Lack of General Expertise	4.52	1 st	Severe
2	Absence of Clear Planning for Projects Objective	4.51	2 nd	Severe
3	Complex Project Objectives	4.51	2 nd	Severe
4	Unclear Project Goals and Objectives	4.51	2 nd	Severe
5	Inaccurate Planning for Payment of Contractors	4.42	5 th	Severe
6	Variance Between Owner and Contractor in Defining their Project Cost	4.40	6 th	Severe
7	Dislike or Distrust of Control Systems	4.40	6 th	Severe
8	Poor Skills in Scheduling and Controlling	4.38	8 th	Severe
9	Inaccurate Plan for Contract Deliveries	4.37	9 th	Severe
10	Lack of Clearly Defined Team Members	4.25	10 th	Severe
	<i>Average</i>	<i>4.43</i>		Severe

Table 4.2 reveal the Mean Item Score (MIS) of Barriers to the Success of Project Cost Management which shows that the four (4) barriers are very severe such as “Team Lack of General Expertise”, “Absence of Clear Planning for Project Objective” “Complex Project Objectives” and “Unclear Project Goals and Objective” with MIS value of 4.52, 4.51, 4.51 and 4.51 respectively but the most severe barrier to the success of project cost management is “Team Lack of General Expertise” with MIS of 4.52.

Table 4.3 shows the Strategies for Improving success of project cost management, in order to analyze them the Mean Item Score was employed to rank the eight (8) factors.

Table 4.3: Strategies for Improving success of project cost management

S/No.	Factors	MIS	Rank	Decision
1	Build a Project Team With the Right Skills	4.55	1 st	Very Effective
2	Develop a Planning and Controlling Process	4.52	2 nd	Very Effective
3	Develop a Shared Understanding Between Owner and Contractor About Control System and Contract Deliveries	4.50	3 rd	Effective
4	Develop a Control System that is Accurate and Trusted	4.46	4 th	Effective
5	Experience and Analytical Ability of Project Personnel	4.42	5 th	Effective
6	Effective Schedule Management Plan	4.27	6 th	Effective
7	Commitment of a High Management	4.22	7 th	Effective
8	Establish Clear Performance Measures	4.12	8 th	Effective
	<i>Average</i>	<i>4.38</i>		Effective

Table 4.3 reveal the Mean Item Score (MIS) of strategies for improving success of project cost management which shows that two (2) strategies are very effective such as “build a project team with the right skills” and “develop a planning and controlling process” with MIS value of 4.55 and 4.52 respectively but the most effective strategy for improving success of project cost management is build a project team with the right skills with MIS of 4.55.

V. CONCLUSSION AND RECOMMENDATION

Based on the results of the research, it can be concluded that the very important factor affecting project cost management was expertise of consultants and design completion but the major factor is expertise of consultant. Four barriers to the success of project cost management are very severe: teams lack of general expertise, absence of clear planning for project objective, complex project objective and unclear project goals and objective. The most effective strategy is build a project team with the right skills. It can therefore be finally concluded that the impact of stakeholders on the success of project cost management in Abuja is significant and very important and plays a key role for the successful delivery of construction project. The source of data for conducting this study was

literature review. Current related literature was consulted and successfully processed and analyzed.

It is recommended that the identified factors are to be considered in order to improve project cost management because they are very important “expertise of consultant” “design completion” and consequently must be taken into account in any project cost management. The study also shows that building a project team with the right skills is the most effective strategies in improving project cost management and there should be an effective awareness of stakeholders on the success of project cost management.

REFERENCES

- [1] Adewunmi, Y., Omirin, M., Koleoso, H.: Developing a sustainable approach to corporate FM in Nigeria. *Facilities* 30(9), 350–373 (2012).
- [2] Ahn, Y.H, Pearce A.R, Wang Y. and Wang G., “Drivers and barriers of sustainable design and construction: The perception of green building experience”, *International Journal of Sustainable Building Technology and Urban Development*, vol. 4, no. 1, pp. 35-45, 2013.
- [3] Ajayi, O. M., Ogunjami, O. E., Ajayi, A. K and Ofili, C.M. (2010). Factors Affecting Performance of Contractors on Construction Projects in Lagos State. *Proceedings of the Construction, Building and Real Estate Research Conference of the Royal Institute of Chartered Surveyors*, Paris 2-3 September 2010.
- [4] Akadiri, O. (2011). Development of a multi-criteria approach for the selection of sustainable materials for building projects. Unpublished Ph.D. thesis, School of Engineering and the Built Environment (SEBE), University of Wolverhampton, U. K.
- [5] Alabi, A.A., Comparative Study of Environmental Sustainability in Building Construction in Nigeria and Malaysia”, *Journal of Emerging Trends in Economics and Management Sciences*, Vol.3 No.6, pp. 951-961, 2012
- [6] Allan Ashworth (2010). *Cost studies of buildings*. Pearson Education Limited. 5th Edition.
- [7] Alsand .S, Gale .A. and Edward .R. (2011), Challenges of sustainable construction in Kuwait:investigating level of awareness of Kuwait stakeholders. *World Academy of Science, Engineering and Technology*, 59,2197-2204.
- [8] Amade, B., Ubani, E.C., Amaeshi, U.F. and Okorochoa, K.A. (2015). Factors for Containing Failures and Abandonment of Public Sector Construction Projects in Nigeria. *Journal of Building Performance*. 6(1), 63-76.
- [9] Ameh O. J. and Odusami K. T. (2010), Professionals’ Ambivalence toward Ethics in the Nigeria Construction Industry. *Journal of Professional Issues in Engineering Education and Practice*, 136(1),9.
- [10] Anaman, K.A, and Osei –Amponsah, C. (2007). Analysis of the casualty links between the Growth of the construction industry and the growth of the macroeconomy in Ghana. *Construction Management and Economics*, 25(9), 951 -961.
- [11] Ashworth, and K. Hogg, “Willis’s Practice and Procedure for Quantity Surveyor”, Blackwell Publishing Ltd, Oxford, UK. 2007.
- [12] Ayarkwa, J., Acheampong, A., Wiafe, F., and Boateng B. E., Factors Affecting the 2017 - 6th Implementation of Sustainable Construction in Ghana: The Architect’s Perspective. *ICIDA International Conference on Infrastructure Development in Africa - 12-14 April*, Knust, Kumasi, Ghana, 377–386, 2017
- [13] Boxenbaum, E. Georg, S., De Linde, G. G., Reijonen, S., Aggeri, F., Acquier, A., Pinheiro, R., Béjean, M. (2010). Innovation in Sustainable Construction: Eco-Cities and Social Housing in France and Denmark. Paper presented at the *Constructions Matter- Managing Complexities, Decisions and Actions in the Building Process*.
- [14] Chan, I. Y., & Liu, A. M. (2012). Antecedents of Innovation Climate in Construction Firms in Hong Kong. *International Journal of Construction Management*, 12(4), 37-46.
- [15] Creswell, j. (2003). J. 2003. *Research Design Qualitative, Quantitative, and Mixed Methods Approaches*. Handbook of mixed methods in social & behavioral research, 209-240.
- [16] D’Incognito, M., Costantino, N., & Migliaccio, G. C. (2013). Assessing the Influence of Cultural Issues on the Adoption of Life Cycle Management Tools. In S. Kajewski, K. Manley, & K. Hampson (Eds.), *Proceedings of the 19th International CIB World Building Congress*. Brisbane: Queensland University of Technology.
- [17] Dlamini, S., 2012. Relationship of construction sector to economic growth. *Proceedings of International Congress on Construction Management Research*, 26-29 June 2012, Montreal, Canada.
- [18] Dzokoto S.D, Dadzie J. Barriers to sustainable construction in the Ghanaian construction industry: consultants perspectives In: Laryea, S. and Agyepong, S. (Eds) *Proc 5th West Africa Built Environment Research (WABER) Conference*, 12-14 August 2013, Accra, Ghana, 223- 234, 2013
- [19] Eley J., “Sustainability Building: The Client’s Role, London: RIBA Publishing, 2011.
- [20] Elmualim, A., Valle, R., Kwawu, W.: Discerning policy and drivers for sustainable facilities management practice. *Int. J. Sustain. Built Environ.* 1(1), 16–25 (2012)
- [21] Eriksson, P. and Westerberg, M. (2012), Effects of Procurement on Construction Project Performance, Retrieved on 25th October, (2012) from <http://www.pure.itas/portal/files/3477530/Procurement_relat ed_success=factors_effect _on_project_performnce_submitted_IAMT.pdf
- [22] Hakkinen, T. and Belloni, K. (2011). Barriers and drivers for sustainable building. *Building Research and information*, 39:3, 239 -255, Eley, J. (2011) *Sustainability building: the client’s role*, London: RIBA Publishing.
- [23] Hatmoko, J.U.D., 2008. The impact of supply chain management practice on construction project performance, PhD Thesis, New Castle University, UK.
- [24] Keith Potts (2018). *Construction Cost Management: Learning from Case Studies*. Construction Management and Economics.
- [25] Khalil, N., Husin, H.N., Mahat, N., Nasir, N.: Sustainable environment: issues and solutions from the perspective of facility managers. *Procedia Eng.* 20, 458–465 (2011).
- [26] Maizon, H. Mellisa, C. Tay, L. Shim, M. Ng, C. and Ng, S. (2006) *Factors influencing the selection of procurement systems by client*. *Proceedings of the International Conference on Construction Industry*, June 21-25 2006, International Council for Research and Inivation in Building Construction, Padang, Indonesia, pp 1-10.
- [27] McMahon, M; Marks, H. and Wallace, O. (2015) What is sustainable construction, available online from: <http://www.wisegeek.com/what-is-sustainable-construction>.
- [28] Marczyk g.r, David Dematteo and David S Festinger (2005). *Essentials of research design and methodology*.
- [29] Nissanka.N. and Sepani.S., “Acceptability of Lean concepts to Functions of Quantity Surveyors in Sri Lanka”, *Lean Construction Journal*, Vol 1, pp. 1-11,2007.
- [30] Ojo, E. C. Mbowa and E.T.Akinlabi 2014. Barriers in Implementing Green Supply Chain Management in Construction industry. *Proceedings of the 2014 International Conference on Industrial Engineering and Operations Management Bali, Indonesia*, January 7 – 9, 2014.
- [31] Oke, A.E., Aghimien, D.O., Olatunji, S.O.: Implementation of value management as an economic sustainability tool for building

- construction in Nigeria. *Int. J. Managing Value Supply Chains* 6(4), 55–64 (2015).
- [32] Oladinrin, O. T., Olatunji, S. O. and Hamza, B. T. (2013). Effect of Selected Procurement Construction Engineering and Technology, 4(1), 48 - 62.
- [33] Oluwole J.O.A., “Accelerating Sustainable Construction in Nigeria: The Professionals’ Perspective”, *Civil and Environmental Research*, vol. 2, no. 7, pp. 61-67, 2015.
- [34] Ortiz, O.; Pasqualino, J.C.; Castells, F. Environmental performance of construction waste Comparing three scenarios from a case study in Catalonia, Spain. *Waste Manag.* 2010, 30, 646–654.
- [35] Osanyiro, O.J; Aghimien, D.O (2017). Assessment of the procurement methods adopted by public procuring entities in Ondo state Nigeria. *Confluence of research, theory and practice in the built environment*.
- [36] Pearce, A. R., Ahn, Y. H., & HanmiGlobal. (2012). *Sustainable Buildings and Infrastructure: Paths to the Future*. Washington, DC: Earthscan.
- [37] PMI. *Project Management Body of Knowledge*. 3rd Edition. PMI, UK; 2013
- [38] Ramsbottom, C. (2013). *A Study on Social Sustainability in Missouri Highway Projects*. M.Sc. Report. Missouri Western State University.
- [39] Shen Liyin, M.ASCE1; Yuzhe Wu2; and Xiaoling Zhang, Ph.D., “Key Assessment Indicators for the Sustainability of Infrastructure Projects”, *Journal of Construction Engineering and Management*, Vol. 137, No. 6, ASCE, 2011.
- [40] Shunnet, K. M. (2008). *An Investigation into The Challenges Facing Building Contractors at Various Stages of Their Existence in Financing Projects*. An Unpublished B.Sc. Thesis, Department of Real Estate and Construction Management, School of Built Environment, University of Nairobi (2008).
- [41] Tang, Z.W; Ng, S.T. and Skitmore, (2019). Influence of procurement systems to the success of sustainable buildings. *Journal of Cleaner Production*. Version 3a (20), doi: <https://doi.org/10.1016/j.jdepro.2019.01.213>.
- [42] Wibowo, A., 2009. *The contribution of the construction industry to the economy of Indonesia: A systemic approach*. Monograph, Diponegoro University, Indonesia.
- [43] Williams, K., & Dair, C. (2012). What is stopping sustainable building in England? Barriers experienced by stakeholders in delivering sustainable developments. *Sustainable Development*, 15(3), 135-147. <http://dx.doi.org/10.1002/sd.308>.
- [44] Zeiler, W., Maaijen, R., Maassen, W.: *Decision support for facilities management of the future: sustainability accelerator*. In: *Proceedings of CIB W070, W092 and TG72 Joint Conference on Procurement Systems, Facilities Management and Maintenance and Public Private Partnership: Delivering Value to the Community*, pp. 353–360. University of Cape Town (2012).