

Value Management Concept Awareness for Construction Projects in Akwa Ibom and Rivers States ¹

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ABSTRACT

This study assessed the use of the value management (VM) concept as a project management technique by construction stakeholders in south-south Nigeria. The objectives were to assess the level of awareness of value management concept for construction projects in Akwa Ibom and Rivers States. A cross-sectional survey approach was used for the study. Two hundred and twenty-seven (227) copies of the questionnaire were administered while one hundred and seventy-seven (177) were properly filled and returned which give a response rate of 78%. Data collected were analysed using percentage and relative importance index while Mann Whitney U-test was used to test the hypotheses. The research findings indicate that even with the level of awareness of VM practices in the study area that stakeholders lack knowledge about various VM methods aside from concurrent VM and design charette. The study recommended that professional bodies and academic institutions should organise sensitisation programmes such as workshops and seminars amongst construction stakeholders as well as in undergraduate curriculum at higher institutions.

Keywords: Value Management; Construction Project; Concept; Awareness.

1. INTRODUCTION

Value management (VM) originated as value analysis, a concept developed by Lawrence Miles during the Second World War (Shen and Liu, 2004) and was popular in the US manufacturing industry during the 1940s. According to Perera, Hayles, and Kerlin (2011), Miles's work based its philosophy on providing the necessary functions at the lowest cost. The original methodology analysed the various components of a product in terms of its functions, considers ways of providing the functions at a lower cost, and confirms the economic and technical viability before

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changing production procedures (Male, Kelly, Fernie, Gronqvist and Bowles, 1998). The practice of VM is till date widespread but its application has been widened and the methodology adapted and translated to meet the needs of different sectors of industry.

Value management is a structured and analytical process that seeks to achieve value and optimize the life cycle cost of a facility through identifying opportunities to do away with all unnecessary costs; while at the same time making sure that quality, reliability, performance and other critical factors are not compromised (Dell’Isola, 1997).

The application of VM in the construction sector has been widely applauded by various stakeholders. The practices have witnessed increased adoption in the areas of functional improvement, cost reduction, communication enhancement and promotion of creative minds. Based on the successes, VM is therefore used to provide clients or end users with the best possible product (building project) (Perera, Hayes and Kerlin, 2011).

1.1 HYPOTHESIS OF THE STUDY

This hypothesis was postulated to guide the study:

H0₁: There is no significant difference in the perception of contractors and consultants on the level of awareness of value management practices in the study area.

2. LITERATURE REVIEW

2.1 Concept of Value and Value Management

The Institute of Value Management (2008) observed that the concept of value relies on the relationship between the satisfaction of many differing needs and the resources used in doing so. The fewer the resources used or the greater the satisfaction of needs, the greater the value. Stakeholders, internal and external customers may all hold differing views of what represents value as well as different needs and want. The aim of value management is to reconcile these differences and enable an organisation to achieve the greatest progress towards its stated goals with the use of minimum resources (Ahmad 2014). There are so many views and opinions on the discipline of value management. The Institute of Value Management (2008) however, defined the term value management as “a style of management particularly dedicated to motivating people, developing skills and promoting synergies and innovation, with the aim of maximizing the overall performance of an organisation”. The concept of value management according to Society of American Value Engineers (2008) is defined as “a systematic, multi-disciplinary effort directed towards analysing the functions of projects for the purpose of achieving the best value at the lowest overall life cycle cost”. This definition is incomplete as observed by De Leeuw (2006) thus, return on investment, which is a vital issue to the private sector supposed to be included. Value management according to Office of Government Commerce USA (2007) is “a well-established

methodology for defining and maximizing value for money”. As incomplete as this definition may be, it suggests that the discipline of value management can be applied to any type of project regardless of size or time- frame and at all stages i.e throughout the life cycle of the project from inception to completion. This may be contrary to the general belief that value management must and can only be applied at the design stage of construction project. This connote that value management is becoming dynamic and various forms of its application in the construction industry are springing up. This discrepancy is further clarified by Kelly and Male (2006) where value engineering is said to be a sub-set of value management in that, the former deals mainly with the design process while the later deals with the overall management of value throughout the contract.

According to Odeyinka (2006), value management is ‘a service, which maximizes the functional value of a project by managing its development from concept to completion and commissioning through the examination of all decisions against a value system determined by the client’. However, it is then summarizes that, value management can therefore be seen as “a systematic and multi-disciplinary process directed towards analysing the functions of project from inception to completion and commissioning (through examination) for the purpose of achieving best value and return on investment at lowest possible overall life cycle cost”. The following can be described as the core of value management definition as observed by Scott (2008).

- i. A systematic or organized approach; Multi-disciplinary.
- ii. Analysis of function (functional analysis); Inception to completion and commissioning.
- iii. Best value; lowest possible overall life cycle project cost and return on investment. Value Management according to SAVE (2008) as ‘a systematic, multi-disciplinary effort directed towards analysing the functions of projects for the purpose of achieving the best value at the lowest overall life cycle cost’ will therefore incorporate other importance practices for construction projects such as risk management, life cycle costing, knowledge management, project management etc.

The SAVE International standard adopts the term value methodology (VM) and it highlights value methodology as including the processes known as; Value analysis, Value management, Value engineering, Value improvement, Value assurance and Value control.

Mandelbaum (2006) further described value as the relationship between the worth or utility of an item in monetary terms and the actual monetary cost of the item. The highest value is represented by an item with essential quality available at the lowest possible overall cost that will reliably perform the required function at the desired time and place while the Canadian society of value analysis (CSVA) defined value as the personal perspective of your willingness to pay for the performance delivered by a product, process or project. It also stated that good value is achieved when the necessary performance can be accurately defined at lowest life cycle cost. Meanwhile

Shublaq (2003) referred value as the most cost-effective way to reliably accomplish a function that meet the user`s need desires and expectations. Dell`Isola (2002) expression for value as follows:

$$\text{value} = \frac{\text{function} + \text{Quality}}{\text{Cost}} \dots \dots \dots (\text{equation 2.1})$$

Where function (the specific work that a design must perform). Quality (the owner/ user`s need, desire and expectation). Cost (life cycle cost (LCC)).

Whereby in 1997, Al-Asheesh defines value as the relationship between the function and performance with the cost. Al-Asheesh further classified value into four types such as;

1. Use value: that is the benefit resulted from owning or using a thing through the capabilities it provides or the functions it performs to the owner or the user. A biro to a secretary is an example.
2. Cost value: is the total amount of money paid to have a product or a service including direct and indirect lost paid during the period of owing it.
3. Esteem value: is the special characteristic of a thing like scarcity or beauty that makes others willing to have it.
4. Replacement or trade-off value: is the value resulted from the containment of the product of properties and functions that makes it benefiting others so that it can be traded off out with another product or money.

2.2 Value management and its application in the Construction Industry

The construction industry all over the world have been perceived to be the life wire of its respective economy as it cuts across all aspects of human activities (Ayangade, 2009) and with this, Nigerian construction industry is not exempted. 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) according to Ayangade, (2009). The contribution of the Nigerian construction industry is yet to measure up those of the western world like United Kingdom and Australia due to its developing nature among other reasons. As observed by the same researcher (Ayangade, 2009) whereas the construction industries of other developed countries are responsible for about 22% of their respective GDP`s the Nigerian case is different as it contributes slightly below 16% to its economy. However, this could be said to be complemented by the relatively higher employment (20%) it provides for its whooping 140 million citizens compared to the 12% as in the case of developed countries. Mbamali (2004) attributed this to relatively lower use of

mechanization within construction in Nigeria on the high dependency of Nigerian economy on the oil sector.

Obiegbo (2005) noted that the construction industry, unlike other sectors is a complex ones and requires articulate professionals who are ready to live up to its client`s expectations, client in the construction may either be private individuals including corporate bodies or public organisations which include the government.

In Nigeria, the federal government is often seen to be involves in the most complex projects with about 38.4% of the market (Ayangade, 2009) this followed by the state government which is responsible for about 19.20% of the projects in the industry, though there is still some form of pertaining between different classes of clients. The players in the industry are disparate group of individuals often assembled into temporary teams and may comprise of Quantity Surveyors, builders, architects, engineers, estate valuers, project managers, contractors, sub-contractors, suppliers, labourers and artisans. Activities in the construction industry are carried out on a project basis and could be within an organisation or part of a programme. The product, in the context of construction industry, may be a building, service installation or other infrastructural project. Hence the relevant mix of professionals is expected to possess the relevant skills, knowledge tools and techniques to achieve the project goals. The application of these variable skills, knowledge tools and techniques, with the aim achieving the required objective is referred to a project management (PMI, 2004). According to Obiegbo (2005), the contractual procurement strategy, which was define as a basis for client`s action in defining the procedure to be followed from the inception of the project to handover, plays an important role in the performance of the industry. Baldwin (1998) opined that, “any construction project should only be commissioned following a careful analysis of needs since failure to think through project requirement will almost certainly cause problems for subsequent design and construction stages” for that reason the Construction Industry Board (CIB) recommends that value management be incorporated as an integral part of the construction process.

2.3 Value Management Methods

There are a number of different methods through which the VM process can be implemented. According to Phillips (2002), the choice of method to use may depend upon the type of project and the objectives of the client.

40-hour workshop

The 40-hour workshop is considered to be the most comprehensive implementation of the VM process and takes five full working days to complete. This traditional approach to the VM process is highly time consuming and expensive, but can provide best results (Kelly and Male, 1993).

Design Charrette

A shortened version of this process, which some refer to as a “design charrette” may be adopted. This generally takes between one and three days to complete (Kelly 2004) and is the preferred approach as it is shorter and costs less in terms of up front time and resourcing.

Value Engineering Audit

The value engineering audit as explained by Kelly and Male (1993) is a service which analyses the expenditure proposals of associated branches of large companies or government departments. This would be handled by highly trained facilitator or expatriates.

Concurrent Value Management

Concurrent VM is on the other hand, a continuous and parallel process of implementing VM throughout the design development phases. This would require a specialist value manager employed for its implementation Kelly and Male (1993).

Contractor`s Change Proposal

The contractor`s change proposal is essentially a post tender method. The contractor is able to use their expertise to propose alternatives resulting in time and or cost savings with possibility of sharing the benefits so derived (Kelly and Male, 1993).

However, in a study by Ahmed (2014) on knowledge of VM concept in North Eastern Nigeria was seen that 69.2% of respondents are aware of VM while 30.8% of them are not aware of this concept. The observation from this studies indicate that though there is a high level of awareness of VM in several countries and even other regions in Nigeria. There is a need to ascertain the level of VM awareness in Akwa Ibom and Rivers States, Nigeria.

2.4 Level of Awareness of Value Practices

This variable group evaluates stakeholders` level of awareness of value management practices in the construction industry. The understanding is determine stakeholders level of knowledge and level of use of five value management practices obtained from the literatures. Variable applied in measuring level of awareness and sources is presented in Table 2.1

Table 2.1: Measurement Variables of Level of Awareness of VM Practices

Code	VM method	Sources
AWR1	40-hour workshop	Kelly and Male, (1993). Theiry, G. (1996):
AWR2	Design charrette	Kelly, (2004)
AWR3	Value engineering audit	Ahmed (2014), Kelly and Male (1993)
AWR4	Concurrent VM	Kelly (2004), Ahmed (2014)
AWR5	Contractor's change proposal	Ahmed (2014), Kelly and Male, 1993).

3. METHODOLOGY

3.1 Research Design

This study adopted exploratory and quantitative survey approaches. According to Cooper and Schindler (2006), exploratory studies enable a researcher to develop concepts more clearly, establishes priorities, develop operational definitions, and improve the final research design. It was used in this study to generate and clarify issues associated with the concept of value management among construction organisations. Quantitative survey is a social science tool used to answer who, where, what and how questions in research (Saunders, Lewis, and Thronhill, 2009). It was adopted for this study because of (1) the possibility to generate findings that are representative of the whole population which could potentially be generalised to all states in the South-South Nigeria; and (2) the fact that it gives the researcher more control over the research process (Saunders Lewis and Thronhill, 2009). The quantitative survey approach involved the use of structured questionnaire.

3.2 Area of study

This study was carried out in two selected south-south states of Akwa Ibom and Rivers. Akwa Ibom state lies between latitude $4^{\circ}32^1N$ and $5^{\circ}33^1N$ and longitude $7^{\circ}25^1E$ and $8^{\circ}25^1E$. It is bounded on the east by Cross River state, west by Rivers state and Abia state, and south by the Atlantic Ocean. It was created out of the old Cross River state in 1987 and has a population of approximately 4million according to the 2006 national census. The state has the highest reserve of oil and gas in the country and boost of two major sea ports in the Atlantic Ocean and an international airport in the capital city of Uyo (Ikediashi, 2014). *Rivers state* on the other hand

prides itself as one of the largest economies in Nigeria, mainly because of its crude oil. The state has two major refineries, two major sea ports, airports and several industrial estates spread across the state capital, Port Harcourt. It was created in 1967 and has an area of 11,077 square kilometres. With a population of 5,198,716 (NPC, 2007), it is bounded to the south by the Atlantic Ocean, to the north by Imo, Abia, and Anambra States, to the east by Akwa Ibom state and to the west by Bayelsa and Delta States (Ikediashi, 2014).

These two states were selected for this study because of massive infrastructural development going on as result of oil wealth. Many companies both in the public and private sectors are jostling to grab a share of the massive construction boom taking place in the area. This study investigated how the use of VM can bolster effectiveness and efficiency in project delivery in the two states.

3.3 Population and Sample

Population of a study is defined as the collection of all items whether of people or of objects or of events, that are to be considered in a given problem situation (Udofia, 2011), The population for this study consisted of construction stakeholders who fall under contractors and consultants and included builders, civil engineers, service engineers, electrical engineers, structural engineers, estate managers, architects and quantity surveyors, project managers and value managers operating within the study area. Source of the research population was through direct contact, phone calls, social media and text messages. These stakeholders are responsible for managing clients’ values and norms and interests when it comes to construction projects. The sample frame was drawn from the data base of the professional bodies such as NIOB, NIA, NIESV, NSE and NIQS among others. (Researcher’s field work 2018). The population frame was established to be 523 based on the directories of professional bodies as shown below.

Table 3.1: Population Frame for Akwa Ibom State (AKS) and Rivers State (RVS).

Designation	AKS	RVS
Architects	49	43
Builders	24	17
Engineers	117	134
Estate surveyors	47	26
Quantity surveyors	28	38
Total	265	258

Source: Researcher’s field work (2020)

The sample size of 227 is estimated for this study as obtained from Yamane (1967) expression as shown in equation 1;

$$n = \frac{N}{1 + N(e)^2} \quad \text{Equation (1)}$$

Where n = sample size, N = Population size, e = level of precision = 0.05 at 95% confidence level. Substituting into the above formula we have;

$$n = \frac{523}{1 + 523(0.05)^2} = 227$$

The formula was adopted to take care of the confidence level as well as the level of precision required to accommodate the probable sample error.

3.4 Sample Technique

Stratified and simple random sampling techniques were adopted for this study. This is to enable proportional participation of selected contractors and consultants. Stratified random sampling divides a population into series of relevant strata in such a way that each of the strata is represented proportionally within the sample (Fellows and Liu, 2008) and was used to divide respondents into strata (sub-population) based on their geographical locations (as in the case of Akwa Ibom and Rivers States). The population was also stratified on the basis of construction stakeholders i.e. contractors and consultants which include; builders, quantity surveyors, estate surveyors, architects and engineers as shown in the equation 2 below;

$$N_1 + N_2 + N_3 + \dots + N_n = N \text{ ----- Equation (2)}$$

Simple random sampling was used to select sample of respondents from each state.

Table 3.2: Sample Size of Each Component of the Population Frame (AKS and Rivers)

Designation	Population(N)	Sample size(n)
Architects	92	75
Builders	41	37
Engineers	251	154
Estate surveyors	66	57
Quantity surveyors	73	62
Total	523	227

Source: Researcher's field work (2020)

3.5 Data Collection

Data for this study were collected using both primary and secondary methods such that observations, interviews were carried out primarily. Moreover, a cross-sectional questionnaire was designed as well as administered to take care of (1) respondents' background, and (2) level of awareness of VM in the study area. To ensure a good response rate, copies of the questionnaire were first piloted by administering to the research supervisor, some academic staff in the

Department and some practitioners in the field of VM. Final copies of the scrutinised questionnaire were administered through face-face by a team of research assistants led by the researchers. Nominal, interval and ordinal (Likert) scales were used as scales of measurement in this study. Nominal scales were for questions relating to respondents' demographic characteristics while interval scales were used for questions that bothered on respondents' years of experience. Likert scales were used to address questions in sections B of the questionnaire. While the secondary method of data were collected through journals, textbooks, previous studies, related reports and internet reserves as seen in the literature review of this study.

The reliability analysis on the questionnaire constructs was conducted using Cronbach's alpha. Reliability is the extent to which the data collection and analytical techniques will yield consistent findings while alpha values greater than 0.7 are regarded as sufficient (Pallant, 2010). The questionnaire was examined and criticised by experts to ensure its adequacy and effectiveness in achieving the intended results. The reliability analysis on the study was carried out on the research instrument and the outcome of the test conducted on the data gathering instrument gave 0.769 (Cronbach's Alpha value). The results are satisfactory and implied internal consistency of test items.

3.6 Data Analysis

Data collected were analysed using basic descriptive and inferential statistical tools while Statistical package for social sciences (SPSS) version 22 was used in processing the analysis. Specifically, descriptive statistics was used to analyse the demography of respondents and their organisations.

3.6.1 Descriptive Statistic

They are tools for depicting or summarizing data so that they can be more readily comprehended (Kirk, 2008). It is the simplest method of analysis which provides a general overview of the results. It gives an idea of what is happening. The descriptive method can either analyse the responses in percentages (as in large sample) or in numbers (in a small sample).

Relative Importance Index (RII) was used to analyse objectives 1- 4 to identify the order of importance. Scores entered by respondents was transformed into RII values using equation 1:

$$RII = \frac{\sum w}{AN} \text{ ----- Equation (3).}$$

Where w is the weighting allocated to each factor by respondents which ranges from 1 to 5, A is the highest weight (5 for this study), N is the total number of respondents and RII is the relative importance index. The same approach was used in similar studies of Aibunu and Jagboro (2002); Ugwu and Haupt (2007); Ikediashi and Ogwueleka (2016).

3.6.2 Inferential Statistic

Mann Whitney U-test, a non-parametric test, was used to analysis all the hypotheses at 5% significance level. Non-parametric tests have the obvious advantage of not possessing restrictive assumptions of normality or homogeneity of variance (Pallant, 2010). Mann Whitney U-test was used to compare two sets of data. Therefore, it was adopted in this study to compare the perception of Contractors and Consultants towards value management concept for construction projects.

4. DATA PRESENTATION, ANALYSIS AND INTERPRETATION

Table 4.1 shows the response rate of the questionnaires administered. Two hundred and twenty-seven (227) questionnaires were administered while one hundred and seventy-seven (177) were properly filled and returned, representing 78% which is far above the 30% rate as an acceptable response rate in construction studies (Ryal-Net and Kaduma, 2015 in Uduak, 2018). Hence, a total of one hundred and seventy-seven copies of questionnaire was used for the analysis.

Table 4.1: Analysis of Response Rate

Responses	Number	Percentage
Questionnaires properly filled and returned	177	78
Questionnaires not properly filled and returned	50	22
Total	227	100

Source: Researcher's field work (2020)

4.2 Respondent's Characteristics

Table 4.2 shows the result of respondent's characteristics. The characteristics are job description, years of experience, location of organisation, designation and academy qualification.

Table 4.2: Analysis of Respondent's Characteristics

Characteristic	Frequency	Percentage
Job description		
Contactator	77	43.5
Consultant	100	56.5
Total	177	100

Years of experience		
5-10years	61	34.5
10-20years	93	52.5
20-30years	23	13.0
30 above	Nil	0
Total	177	100
Location of organisation		
Akwa Ibom	117	66.1
Rivers	60	33.9
Total	177	100
Designation		
Architect	29	16.4
Builder	27	15.3
Engineer	63	35.6
Estate surveyor	20	14.7
Quantity surveyor	32	18.1
Total	177	100
Academy qualification		
ND	Nil	0
HND	Nil	0
B.Sc.	59	33.3
M.Sc.	58	32.8
Ph. D	60	33.9
Total	177	100

Source: Researcher's field work (2020)

As shown in Table 4.2 above, the job description outcome reflects that 56.5% of the respondents were consultants, 43.5% of them were contractors. The results of the respondent's years of experience reveals that 34.5% of the respondents were experienced between 5-10 years, 52.5% of them were between 10-20 years, 13.0% of them were experienced between 20-30 years and none of them were above 30 years. Since value management study does not gain wider spread in Nigeria construction industry as well as South-South zone. The result of this study will be true and satisfactory enough base on 66.1% of respondents operating within Akwa Ibom and 33.9% of respondents in Rivers State. The result of the respondent's designation reveals that 15.3% of them were builders, 16.4% were architects, 35.6% were engineers, and 18.1% were quantity surveyors while estate surveyors form 14.7%. This shows that the appropriate designations were represented in the study. The result also shows that none of the respondents were at the level of either National Diploma (ND) or higher diploma (HND) in the academy qualification of the respondents. 33.3%

of them have Bachelor of Science (B.Sc.) degree, 32.8% have Master of Science (M.Sc.) while 33.9% attained the doctor of philosophy (Ph.D.) qualification.

4.1 Level of Awareness of Value Management Practices

In order to assess the level of awareness of value management concept for construction projects, five value management practices were sourced from the literature and subjected to the views of consultants and contractors in Akwa Ibom and Rivers States. The results of analysis showing the relative importance index (RII), ranks are shown in Table 4.3

Table 4.3 Awareness Level of Value Management Practices by Stakeholders

Value Method/Practices	Contractor				Consultant				Total	
	AKS- RII	R	RIV- RII	R	AKS- RII	R	RIV- RII	R	RII	R
40-hour Worksop	0.157	2	0.162	3	0.243	5	0.062	3	0.624	4
Design charrette	0.131	5	0.066	5	0.368	4	0.059	5	0.624	4
Value engineering audit	0.135	4	0.190	2	0.434	2	0.071	2	0.830	2
Concurrent VM	0.168	1	0.079	4	0.425	3	0.060	4	0.732	3
Contractor's change proposal	0.153	3	0.206	1	0.450	1	0.077	1	0.861	1

Source: Researcher's field work (2020)

Table 4.3 revealed that the responses of stakeholders on their level of awareness of value management concept on value management methods by construction stakeholders in the study area. Contractor's change proposal ranked 1st among contractors in Rivers with an RII score of 0.206 and 3rd in Akwa Ibom with an RII score of 0.153. It was also ranked 1st among consultants in Akwa Ibom and Rivers and even ranked 1st with an RII of 0.861 in overall ranking. Value engineering audit was ranked 4th among contractors in Akwa Ibom with an RII of 0.135 and 2nd in Rivers with an RII score of 0.190 among consultants in Akwa Ibom and Rivers with an RII score of 0.434 and 0.071. Its overall rank was 2nd with an RII score of 0.830 while concurrent VM ranked 3rd with an RII score of 0.732 but 1st with an RII score of 0.168 among contractors in Akwa Ibom, 4th with an RII score of 0.079 in Rivers and ranked 3rd with an RII of 0.425 among consultants in Akwa Ibom and 4th with an RII score of 0.060 in Rivers while design charrette and 40-hours ranked 4th overall RII score of 0.624 meanwhile 40-hours among contractors in Akwa Ibom ranked 2nd and 3rd with RII score of 0.157 and 0.162 and among consultants in Akwa Ibom and Rivers ranked 5th and 3rd with RII score of 0.243 and 0.062 respectively while design charrette ranked 5th with RII score of 0.131 and 0.066 among contractors and 4th and 5th with RII of 0.368 and 0.059 among consultants in Akwa Ibom and Rivers respectively.

4.3.1 Test of Hypothesis

Hypothesis one stated that there is no significance difference in the perception of contractors and consultants on the level of awareness of VM practices for construction projects in the study area. The decision rule is such that if p-value is less than 0.05, it means null hypothesis is rejected and the alternative hypothesis is accepted. Otherwise, the null hypothesis is accepted and the alternative hypothesis is rejected.

Table 4.4: Mann Whitney U test result for Awareness of VM

VM method	Designation	N	Ranks		MWU	p>0.05
			Mean Rank	Sum of Ranks		
40-Hour Workshop	Contractor	77	99.58	7668.00	3035.000	.012
	Consultant	100	80.85	8085.00		
Design Charrette	Contractor	77	85.34	6571.50	3568.500	.377
	Consultant	100	91.82	9181.50		
Value Engineering Audit	Contractor	77	112.85	8689.50	2013.500	.000
	Consultant	100	70.64	7063.50		
Concurrent VM	Contractor	77	89.58	6897.50	3805.500	.888
	Consultant	100	88.56	8855.50		
Contractor's change proposal	Contractor	77	110.47	8506.50	2196.500	.000
	Consultant	100	72.47	7246.50		

Source: Researcher's field work (2020)

From Table 4.4 above, most of the variables are with p-value less than 0.05, which indicates that they are significant. This means that the null hypothesis is rejected, while alternative hypothesis is accepted for the variables. However, there are only two variables with p-value greater than 0.05. Therefore the null hypothesis is accepted, while alternative hypothesis is rejected. The study shows that even though stakeholders are aware of various value management methods, but they are more familiar with a concurrent value management and design charrette in the study area. It is also tallied with a study conducted by Ahmad (2014) in the North-Eastern Zone of Nigeria which concluded that, although respondents were aware of the concept of VM, they however lack awareness of VM methods to adopt.

4.7 Discussion of Major Findings

The findings emanating from the study were discussed as follows:

4.7.1 The Awareness Level of Value Management Concept in the Study Area.

The study on the awareness level of VM concept by construction stakeholders in the study area revealed that there is a high level of VM awareness for construction projects among stakeholders. It can be asserted that since the stakeholder are much aware of the relationship between VM and the sustainability of construction projects, its usage can be easily anticipated. This outcome is in agreement with a study by Jaapar, Endut, Bari and Takim (2009) indicated that the awareness level of VM in Malaysian construction industry is very high. Also, a study in the North Eastern Nigeria by Ahmad (2014) was observed that there is a high level of VM awareness among construction stakeholders. Connaughton and Green (1996), in China observed that the stakeholders are much aware and have enjoyed the benefits of VM in construction projects.

The results from the hypothesis on the variation of VM methods awareness among construction stakeholders revealed a significant variation in their awareness level for three variables, and the null hypothesis was rejected while alternative hypothesis was accepted for these variables; also two of the variables (concurrent VM and design charrette) revealed a not significant variation, indicated that the null hypothesis was accepted for them while the alternative hypothesis was rejected. This shows that though the stakeholders are aware of VM and its concept in the study area, most of them are more familiar with concurrent VM and design charrette than the other methods (40-hour, value engineering audit and contractor's change proposal). This implies that most stakeholders are still lacking behind in getting their selves acquainted with the other VM methods in order to compare their effectiveness on project execution.

5. CONCLUSION AND RECOMMENDATION

Based on the findings of this study, it is therefore concluded that, there is a wide spread knowledge of value management and its benefits in terms of Joint ownership of solutions and commitment to implementation; identifies and removes unnecessary costs associated with the projects; it provides the structure for the team to collaborate and gain the benefits of partnering and VM challenges the established views and private agendas that some of the project team members may have etc, still the stakeholders are not familiar with other VM methods aside from concurrent VM and design charette.

5.1 Recommendations

Based on the conclusion of this study, the following recommendations are made;

The need for sensitization of value management concept on construction projects for stakeholders in the study area through formal, informal training and re-training. Formal training could be graduate studies in construction project management or informal training could take the form of career counselling and development programs (like value management awareness program) organized by academic institutions or professional entities such as Nigerian Institute of Building (NIOB), Nigerian Society for Engineers (NSE), the Nigerian Institute of Estate Surveyors and Valuers (NIESV), Nigerian Institute of Architecture (NIA) among others. The training is expected to increase the knowledge of the subject and understanding of the importance of value management for construction projects delivery. This recommendation is mainly for individual consumption, firms and government establishment since staff development based on the administration of the organisation.

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