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Application of Value Management Methodologies to Project Selection in Nigerian Construction Industry

Oluwabukunmi A. Ogunsanya¹, Clinton O. Aigbavboa² and Wellington D. Thwala³

Abstract

Previous researchers have proposed that efficient project selection is one of the critical factors that determine project success. Current realities indicate that end users do not accept certain projects despite attempts by these projects at meeting targets of quality, cost and time. Such is the case of certain government-sponsored projects in Nigeria which gets abandoned or fail to attain full utilization. Policy makers assume they know what the people need without consulting them. The value question is hardly adequately answered and agreed upon across the spectrum of stakeholders. The scenario above created the need for this research which explores how value management methodologies can be applied to project selection processes in Nigeria. The study adopts mainly the review of literature of value management. The findings showed that a more inclusive, benefits-oriented, value-laden project selection process will lead to a decrease in unused and underutilized public projects in Nigeria. Hence, improving end user satisfaction. This supports the position of established literature and scholarly position in the field of value management which emphasized team oriented, stakeholders inclusive process.

Keywords: Project Selection, Project Success, Stakeholders, Value Management, Construction Industry.

1.0 Introduction

Studies on Value Management (VM) by Thiry (1997), Kelly et al. (2004) and Stewart (2005) focused on its use as a methodology to improve value of construction projects.

1. Doctoral Student, Department of Construction Management and Quantity Surveying, University of Johannesburg, Box 17011, Doorfortein, kunmiayopo@gmail.com

2. Senior Lecturer, Department of Construction Management and Quantity Surveying, University of Johannesburg, Box 17011, Doorfortein, caigbavboa@uj.ac.za

3. Professor, Department of Construction Management and Quantity Surveying, University of Johannesburg, Box17011, Doorfortein, didibhukut@uj.ac.za

Thiry (2004) set the pace for this research. The writer argues for the use of VM methodologies as means of achieving stakeholders' expectation in the most effective way. More recently, Olanrewaju and Khairuddin (2007) and Oke and Ogunsemi (2011) advocated for the use of VM as a tool for value delivery in Nigerian Construction Industry. Therefore, the aim of this paper is to evaluate the applicability of VM methodologies in project selection in Nigerian Construction Industry. Hence, review the current level of VM applications in the country and propose VM methodologies for enhanced project selection.

According to CIA (2015), Nigeria is a country with a population of over 180 Million people. Infrastructure deficit is one of its current challenges. It is of utmost importance that the government use its limited resources to meet the need of its ever increasing population in the most efficient manner. Delivery of projects is a major means of achieving infrastructure development (CIDB, 2011). The Government has to determine which of these proposals is best for the society while achieving economic and social benefits. Thus, for these projects to be successful, there must be continuous support by all the stakeholders as well as the availability of adequate resources (Association for Project Management, 2006). Therefore, embarking on a project that lacks the support of major stakeholders and most importantly end users is futile. All stakeholders must be involved in the process of project selection (Pinto, 2010). Value Management (VM) promises an all-inclusive, team-based approach in the delivery of optimum value to the clients.

2.0 Literature Review

2.1 Value Management

There is a consensus among researchers that what is currently known as Value Management has its roots in the works of Miles of the General Electric, USA (Stewart, 2005). VM was then described as Value Analysis. This approach which was developed as a problem-solving method sought to substitute materials in existing designs. The earliest application of Value Analysis was in 1940's and was in the manufacturing sector.

Yan (2012) defines Value Engineering also known as Value Analysis as function analysis of a product or job in order to increase the value. He argued further that value projects involve three basic units; the value, the function and the life cycle cost. Thus:

$$\text{Value (V)} = \text{Function (F)} / \text{Cost (C)}.$$

He posits that on application of this concept to construction projects the following holds;

$$\text{Value (V)} = (\text{F} + \text{Q}) / (\text{C} + \text{T}) \quad \text{where F = Function, Q = Quality, C= Cost, T= Time.}$$

Some authors argue that Value Engineering is a process that can be applied all through the product development phases or project lifecycle (Yan, 2012).

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According to Kelly et al. (2004), VM is the process in which function benefits of a project are made explicit and appraised consistent with a value system determined by the Client. The Client is required to explicitly and implicitly establish a value system for the project.

The United Kingdom (UK) Construction Industry has adopted VM tools, techniques and methodology (Thiry, 1997 and Kelly et al. 2004). It has since been adopted by many countries such as New Zealand, Germany, France, India, Japan, Saudi Arabia, Hong Kong, Australia, France and Malaysia to mention a few (Jaapar et al., 2011, Kelly et al., 1998, Fong, 1999). The initial reason for the adoption of VM by most countries is its cost saving benefits.

VM has become a well-established tool in the UK Construction Industry mainly benefitting from a strong case made for its continual use by reports such as Latham (1994), Egan (1998), National Audit Office (2001) and other recent enquiries.

The use of VM has moved from manufacturing to construction, strategic planning, process re-engineering, organizational change and concurrent engineering. To this end, modern applications of value management continue to emerge making it a powerful tool for entrepreneurial development (Jay and Bowen, 2013).

VM as practiced in the United States, has design teams separated from the audit team that perform VM. This situation allows for professional rivalry, design responsibility and some legal complexities. VM as practised in the UK in recent time has the design team being integral part of the audit unit even though certain scholars argued this has its demerits such as the design team insisting the old design is the best possible outcome (Jay and Bowen, 2013).

2.1.1 Progression in the development of Value Management

The flow diagram in Figure 1 represents the ideological emphasis in the development of VM. At the beginning, the emphasis was on the cost reduction advantages of the Value Methodology. As its application in manufacturing increased, it became a quality tool. Further, its use deepened in Construction, it was used to achieve time and performance objectives. In recent time, the application of VM has increased to other areas of human endeavour and hence its use in attaining a variety of articulated measures (Akram et al, 2011).

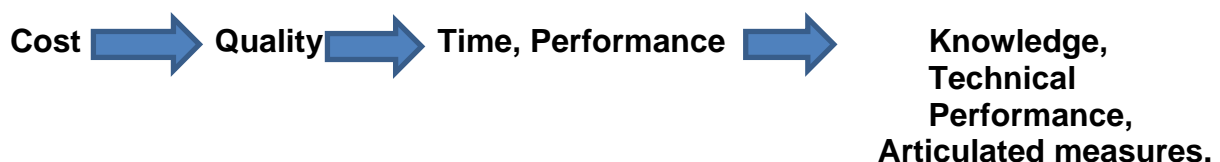


Figure 1: Development of Value Management, Akram et al. (2011)

2.1.2 Advantages of Value Management

According to Akram et al. (2011) and The Institute of Value Management (2015), the benefits of adopting the VM approach on projects are as follows;

- a) Value definition: It helps in understanding what value meant to the owners and users of the project.
- b) Balancing expectation: It serves as a means of optimising the balance between different stakeholders' needs and expectations.
- c) Enhancing project brief: It forms the basis for improving the project brief that reflects the sponsors priorities and expectations expressed as a function.
- d) Communication tool: It provides an opportunity for communication so that all stakeholders are aware of constraints, limitations, and requirements for making appropriate trade-offs.
- e) Design Development: Allows for the improvement of design and performance enhancement in a collaborative environment.
- f) Value Measurement: Provides a functional mechanism for measuring value by considering monetary and non-monetary benefits. A good way to evaluate value for money.

This paper explores how these benefits can help achieve better project selection in the Nigerian Construction Industry. It has been argued that VM can achieve these key elements that have also been linked to successful projects (Thiry, 2004). Thus, it is desirable to seek its use in the Nigerian Construction Industry.

However, since its introduction into construction projects VM has faced challenges that impeded its successful application argues Green and May (1990). Some people misconceive VM as solely a cost reduction process (Jaapar, 2000). Hence, claiming VM is only about lowering the cost of construction projects. This proposition shows a narrow perspective of VM and provides a restrictive use of its methodologies.

In a recent research, Hamid et al. (2011) propose an Integrated Value Management model. The model seeks to integrate Value Engineering, Risk Management and Partnering into the existing VM framework. The study argued that if justified by further research the model stands to deliver better results in the Malaysian Construction Industry rather than just value for money by addressing key stakeholders need, handling uncertainties and fostering collaborative relationships. Also, Leung et al. (2003) argue that consideration of the human dimension/behaviour in VM workshops is very vital in obtaining a holistic view of the entire management process.

2.2 Project Selection

Today, the challenge of project selection is a real one. To choose the best among several alternatives and competing demand for scarce resources is challenge for most organizations and clients (Pinto, 2010). However, selecting a novel project is not fulfilling in itself if it doesn't meet the greater aspirations of the major stakeholders (APMBOK, 2006). Identifying the needs of the owners of a project, balancing expectations from different stakeholders and enhancing the project brief so that the

project is the best option for the client has been identified as one of the key functions of value management in construction (National Audit Office, 2001 and Akram et al. 2011).

Traditionally, Project selection is made after considering which of the proposed projects meet the client's needs most after comparing with certain pre-determined requirements. Several analysis methods have been applied to project selection based on decision models.

The Comparative Approach adopts the benefits measurement methods. The approach chooses the best from a pool of alternatives using; Cost/Benefits Analysis, Internal Rate of Return, Net Present Value analysis, Scoring Models, Economic Models, and Discounted Cash Flow. This is essentially the use of financial models (Pinto, 2010).

The Mathematical Approach adopts the Constrained Optimization Methods. This approach uses Analytical Hierarchical Process (AHP) and Analytical Network Process (ANP). Cheng and Li (2005) argue that ANP can be useful in dealing with inter-dependent relationships in a multi-criteria decision making environment. This process adopts a five-level project selection model which analytically prioritizes the projects under review. This position is supported in the study by Ebrahimnejah et al. (2002) which integrates a modified ANP and an improved compromise ranking method known as VIKOR for optimal selection of projects.

2.3 Nigeria Construction Industry in Context

The Construction Industry in Nigeria is a collection of loosely integrated sub-sectors that collectively construct, alter and repair buildings and civil engineering works. The uniqueness of the industry is derived from the type of physical products, demands patterns, novelty and varying site conditions it operates (Andawei and Nyeke, 2001). Arguably, the Construction Industry in Nigeria is also one of the biggest employers of labour in the country after governments at the federal, state, and local levels (Nwaogu, 1988).

The Industry makes a significant contribution to the country's gross capital formation and gross domestic product (National Bureau of Statistics, 2015). The real GDP for the country for 2010 was ₦54,612,264.18 million in which construction sector's contribution was ₦1,570,973.47million. This implies a share of 2.88%. The construction sector grew by 21.30% to reach ₦1,905,574.90 million in 2011. A reduction in growth rate of the construction sector by 14.86% resulted in the sector closing at ₦2,188,718.59 million in 2012. Hence, the share of construction to GDP that same year stood at 3.05% (NBS, 2015).

The Construction Industry in Nigeria is patterned after the United Kingdom Construction Industry, however, without its diversification and advancement (Gidado, 1995).

The delivery of services and works to prospective clients in the construction Industry follows a variety of processes. It is often the case that the mostly used procurement option in the country is the traditional one or two stage method (Ogunsanmi and Bamisile, 1997). This method emphasizes the separation of the design and the construction stages of a project. Recent developments have shown the adoption of more integrated systems such as Management Contracting, Construction Management, Build, Operate and Transfer (BOT) and Public Private Partnerships, Private Finance Initiatives and Partnering which are at their infancy in the country (Babatunde et al.,2007).

2.4 Challenges of Project Delivery in the Nigerian Construction Industry

Projects delivered by Governments at all levels (Federal, states and local governments) in Nigeria have suffered set back due to lack of adequate inclusion and rigorous consultation with major stakeholders amidst other factors such poor choice of location, improper needs analysis, project imposition, lack of financial analysis, wrong choice of procurement route, inadequate social analysis and corruption (Hanachor, 2012; Ingwe et al., 2012). Projects like the Tinapa Business Resort, Calabar ((Eja and Eni, 2014) and Eyo C. (2011)); The Gateway International Market, Owode Yewa (Punch, 2012), Gateway International Market, Sagamu are examples of projects where inadequate consultations with key stakeholders at inception have led to near failure of the projects after delivery. Other projects were not delivered at all as they fall under the category of abandoned projects (Ingwe et al, 2012).

The scenario above occasioned the need for better project selection because the projects were built at great cost to the people of the country as enormous public funds were committed to the projects.

2.5 Current Value Management Applications in Nigeria

From literature, it is affirmed that the subject of VM and its applications in Nigeria is poorly researched. Studies by Olanrewaju and Khairuddin (2007) indicated that the knowledge and practice of VM is just gaining ground in the country. Likewise, in their study, Oke and Ogunsemi (2011) interviewed a section of professionals in the construction industry on the subject of VM. Their findings indicated that less than 40% of the study population have knowledge of the subject area. Only a small percentage actually admitted participating in any form of VM workshop. The study suggested that the following factors have impacted negatively on the adoption of value management in the country: unstable economy, government policies, professional incompetence and poor management.

The use of VM in the country is still at its infancy. However, this does not prevent the use of its established methodologies which has improved the way projects are delivered in other countries of the world such as Germany, Japan, Malaysia and South Africa.

3.0 Methodology

This paper employs an exploratory review of literature through desktop study of leading journals and academic repositories on the subject of VM. The paper examined literature from peer reviewed articles, journals such as IEEExplore, Emerald, ScienceDirect, textbooks, government websites and online resources.

4.0 Findings and Discussion

Findings show that most of the models and tools used in project selection are based on the assumption that the Clients'/Stakeholders' needs are known. This assumption of knowledge of client's need forms the basis for drawing criteria against which projects are ranked or weights created for evaluating the various options (APM, 2006). The gains outlined as the benefits of VM indicate that VM is veritable tool in aggregating the desires of Clients/stakeholders. This researcher argues that only when the needs of a client/stakeholders are well established can the established models of project selection yield expected results.

The existing reality is that VM practise in the form of Charette, The Forty Hour Study, Value Engineering Audit and Contractor Change Proposal are new in the country (Japaar 2000; and Olanrewaju and Khairuddin, 2007). There is little documented evidence that VM methodologies are applied to construction projects not to talk of documented VM workshops. However, this does not mean that it is not existing and does not prevent scholarly research and raising legitimate argument with policy makers on the subject due to its anticipated and proven benefits in South Africa, Malaysia, United States of America and England.

The literature suggests that VM could be legislated as a requirement by law in the Procurement Act just as it is in the US since the 70's where it is a legal requirement for certain level of public contracts (Jay and Bowen, 2013). Also, addition of value engineering contract as integral part of construction contract is one of the ways of ensuring that the benefits of value adoption are distributed in ways agreeable to all the parties to the project (Zhao et al. 2010). At the construction stage, increasing the value of building products and reducing production costs mainly depends on the contractor. Hence, there must be sufficient motivation for the contractor to buy into the value concept.

Also, this paper shows that though the use of VM is still at its infancy in the country, benefits-oriented and value-laden process of VM would help ensure better project selection by mitigating the challenges of the construction industry identified most especially stakeholder involvement. This is because stakeholders' needs and expectations would have been aggregated in the VM process.

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5.0 Conclusion

VM and its methodologies are not new, however the application into several fields of human endeavour has emerged over time. What is new according to this research is the application of VM to project selection in a developing economy like Nigeria.

In light of the above, an exploratory literature research technique was adopted in this research to determine the extent to which application of VM methodologies can be applied to project selection in the Nigerian Construction Industry in such a way that the needs of the stakeholders are met.

This study concludes that VM methodologies can be applied to project selection in Nigeria and it stands to deliver on the promise of better project selection that meets the aspirations of the stakeholders. The study also establishes that the benefits of VM will lead to stakeholders owning delivered projects and ensuring their success.

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