

The Application of Value Engineering on Construction Projects in Lagos State, Nigeria

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Abstract:- Value engineering is useful for monitoring costs and improving quality. it has given the sector momentum to the global economy. Technology cost management is technology used in various industries to increase efficiency and reliability by reducing costs. The Value Engineering account accepts both non-recurring costs and recurring costs. Many problems affect the construction industry, e.g. B. Poor cost analysis, false cost estimates, shot-information and obscure systems that make it difficult to meet customer requirements. In this context, this study estimates the application of technology costs in construction projects in Lagos State. This journal provides construction professionals with a comprehensive framework to resolve and resolve different projects for basic projects. This study was conducted to compare the multiple ways in which time and costs are reduced in terms of value development and are used in the construction industry. The proposed structured questionnaire was divided into six groups of (6) respondents, reported and returned. The relative importance index has been used to support the agreement of the respondents. The results showed the level of awareness and application of the concept in the construction industry. According to the agreement among the respondents six (6) factors were considered the most important factors that impede the application of inexpensive technology in construction projects. The study concluded that the value of technology is not common in the construction industry, but adds significant value to all construction projects.

Keywords:- value engineering, construction, cost analysis, assessment.

I. INTRODUCTION

A. Background study

The state economy is largely dependent on the building sector. Construction is an important industry that has a great impact on the economic development of the country. The physical and technological foundations of modern civilization were established by the construction industry. Achieving a country's socio-economic goals depends on creating investment opportunities in a variety of connected areas. Many construction projects have failed in Nigeria due to various technical and financial pressures of cost constraints, quality and value optimization. Following the formation of Nigeria's current Democratic government, the Council of Economic Advisers on Contracts has released its initial report (Ugwu, 2018). The main cause is unacceptable, and the cause is a large number of participants. Use of the book management, regular progress, short-term budget, budget, budget, budget, and budget. The main purpose of the book is to be unsuccessful and

unfinished. (Dr. Reuben , Tobechei , & Victor, 2020). Value engineering has become an important tool in addressing rising costs in the construction industry. Definition Value engineering is a proven method of identifying the capabilities of a product or service, quantifying its value, and adding the capabilities needed to achieve desired performance at the lowest possible cost. Systematic application. A survey of the data collected shows that value engineering is not a term used by many experts in the Nigerian construction industry. Also, the Nigerian government does not support the application of legal value engineering practices. (ADUZE , 2015).

B. Statement of problem

Value planning has become an important tool for rising costs in the construction industry. Defining value engineering is the methodical application of proven methods to identify the characteristics of a product or service, determine their value, and add features to achieve the desired performance at the lowest possible cost. From the data collected, value engineering is not a word used by many construction professionals in Nigeria. Furthermore, the Nigerian government does not support the application of value engineering practices through legislation. A project is a human effort to achieve a specific goal within a specific time period. According to clients, time and budget are the only two project-related factors when evaluating the success or failure of a project.

II. AIM AND OBJECTIVES

The purpose of this study is to evaluate the extent to which value engineering is applied to construction projects in the state of Lagos. To this end, a set of questions was posed to determine the extent of the use of value planning in the construction industry. To achieve this, you should consider the following goals:

- Identify the benefits of applying value engineering to construction projects in the state of Lagos.
- List and evaluate obstacles to the implementation of value engineering in construction projects in the state of Lagos.

III. LITERATURE REVIEW

A. Value engineering

Value Engineering (VE) is a form of governance that finds the best way to coordinate activities between cost, quality and productivity. Building a reputation and a strong approach to solving serious problems can reduce costs and transport or increase performance and quality. (K. & MD, 2015). Value engineering can enhance the decision-making process to maximize the owner's funds while maintaining functional and quality standards. Value engineering is another way to explain it. It's a well-thought-out and well-

defined disciplinary process designed to find the best inspiration for beginners and veteran rescuers. After it was first used in assembly during World War II, it was widely used in real estate development business for a long time. (fahmy, 2017). Value Engineering (VE) is not a cost reduction or design/peer review process. The goal of VE is to perform the required functions at the lowest possible total cost (capital, labor, energy and maintenance) during the project. VE is an innovative and harmonious enterprise. (ONETIKK, 2022). Group studies use an experienced multidisciplinary team to study alternative design concepts, materials, and methods to improve value and economics without compromising client functionality and value goals. Value engineering is novel proof of chosen techniques, materials or designs that give relative utility while decreasing beginning or life cycle costs. (VALUE ENGINEERING, 2022). This can be consistent with industry practice under the original contract agreed by the parties to take advantage of potential cost savings without compromising the basic functions and characteristics of the public. Include proposed changes to plans, specifications, or other contractual requirements. improve (VALUE ENGINEERING – OBJECTIVE, VARIOUS APPROACHES & ANALYSIS, n.d.). Cost reduction includes reducing costs by calculating life cycle costs. Value engineering refers to discretionary casings, gear and materials used to separate between discretionary edges, hardware and materials of comparable quality (in view of life cycle cost examination) and similar attributes, as described in drawings and specifications, refers to feasibility analysis . It may be fully specified, purchased and installed at a lower price to achieve more desirable operating characteristics or greater functionality or a combination thereof, at Citi's sole discretion. For the purposes of this definition, a "Life Cycle Cost Analysis" is an assessment of the capital and operating costs of a particular building project, system or equipment over the estimated life of what constitutes a permanent improvement to the project (Ullinger, 2018). The primary goal A sensible plan objective is to accomplish something similar or better execution at a lower cost, while as yet meeting every one of the seven quality necessities. This basically winds up secluding and wiping out covered up, covered up and pointless expenses. It esteems the plan of the work over the usefulness and conceivable outcomes of the article systems and processes. The purpose of value engineering is to:

- Get people to identify areas that need attention and improvement.
- It provides 7 options to generate ideas of possible solutions to the problem.
- provide a means of devaluing substitutes, including intangibles; 4) Provide a means of communication.
- Document the rationale behind the decision.
- Significantly increase the value of goods and services

B. Benefits of value engineering

Value engineering is a technique that reviews the costs related with plan affiliation, organizing and headway and tracks down a compelling strategy for decreasing costs without having a tendency to cut down quality, quality and

last improvement necessities. Nowadays, organizing firms offer different unique packs when they prepare structure plans for you. In case you will start advancement, you may be amped up for the upsides of organizing.

C. Value engineering cuts costs

The best thing about arranging and subsequently some and more individuals utilizing this framework is that it limits costs. Plan contemplations inspect the difficulties and figure out what can be decreased to lessen the expenses related with the business or what compromises can be made to make the business objective. Sometimes, this can abrogate of the best, more reasonable way. At various times, this could merge an expense cutting strategy. At various times, this can abstain from plans that don't add worth or solace to your courses of action.

D. Value engineering improves the quality of the building

Another benefit of straightening out is that it regularly takes out drawing. The genuine factors really confirm that when specialists get the right planning, they contribute a lot of energy looking for cost diminishes, yet there are ways of managing the work with respect to organizing. By taking out pointless expenses, they can get more money off the chance of your creative cerebrum or commitment. In the long run, this can help you with managing huge length costs, things that can exhaust energy or various things that could have passed your arrangement for finishing work excusing status.

E. Value engineering reduces waste

A definitive advantage of a total arrangement is to survey every one of the locks and search for ways of diminishing gatherings. This could incorporate disposing of tasks that are not satisfactory on the most proficient method to decipher them, employing project supervisors for their places that could be utilized by improvement staff you are working with, or winning an arranged Performance Report. At long last, this assists with lessening costs for the organization and to guarantee that every movement is assessed and created (The Benefits of Value Engineering, n.d.).

F. Factors hindering the application of Value Engineering in Nigeria

A survey was conducted to investigate the perception and application of virtual machines in the construction industry in Hong Kong and highlighted the most important reasons. virtual machine. He found that lower application levels could be related to lower VM awareness among senior executives at client organizations. Lack of time to implement VM and lack of understanding of VM are two major factors hindering VM adoption in Southeast Asia. We identified 10 factors hindering the adoption of virtual machines in the Malaysian construction industry. The main factors are lack of understanding of virtual machines, lack of support from authorized parties such as governments and owners, and lack of local guidelines for virtual machine implementation. Of course, lack of knowledge about virtual machines is still a significant problem, but lack of time to implement virtual machines is not a serious hindrance in Malaysia. Even in China, lack of time to implement virtual machines is not a serious problem, the main obstacles are

the lack of virtual machine expertise, lack of technical specifications and standards, and lack of virtual machine experts. came to similar conclusions. Issues related to virtual machines are also of concern in other countries, especially in developing countries. It is noticed that the utilization of WV being developed associations is generally new in Sri Lanka and there is little proof of its utilization being developed organizations. One reason for the absence of uses for virtual machines might be the absence of standard strategies for virtual machine processes, the absence of consistence, guidelines or direction, and the absence of direction or data in the drivers of the improvement business. for organizations to run virtual machines. machines. Virtual machines benefit. in this manner, absence of elements, for example, data, standards, dependable data, absence of the board, absence of time to finish VM, absence of care in VM and client obligation are the 5 fundamental impediments to acquiring VM Lagos. Public venue.

The survey is an exploratory study of 300 registered construction professionals in Lagos State, including architects, structural engineers, builders and contractors. This population set was selected based on extensive knowledge in the field of construction to provide accurate information. Information about the topic being studied. Data was collected using data triangulation, including structured questionnaires and case studies from selected projects in Lagos State. Using the theoretical formula of Yataro (1967), a total of 171 structured questionnaires were distributed, filled out and returned intentionally, the data was analyzed using the material index, and respondents were ranked.

V. RESULTS AND DISCUSSIONS

Q- 1. What are the benefits of applying value engineering to construction projects in Lagos State? Respondents were asked about the known benefits of applying value engineering to construction projects in Lagos. This is to show whether value engineering has served its purpose when applied to a construction project.

IV. METHODOLOGY

		V/H	H	N	V/L	L	TOTAL
1	Improve cost effectiveness	34	56	12	4	4	120
2	Improve cost maintenance	19	56	34	11	0	120
3	Design improvments	24	56	16	0	24	120
4	To achieve innovative ideas	50	34	14	11	11	120
5	Remove unnessary cost	23	52	34	0	11	120
6	Improved functionality	12	52	52	0	4	120

Table 1: Benefits of applying value engineering to construction projects Level of benefits

Questions	V/H	H	N	L	V/L	Total	Total respondents	A*N	RII	Mean	RANKS
Improve effectiveness	170	224	36	8	4	442	120	600	0.73667	3.68	3
Improve maintenance	95	224	102	22	0	443	120	600	0.73833	3.69	2
Design improvments	120	224	48	0	24	416	120	600	0.6933	3.47	6
Achieving innovative ideas	250	136	42	22	11	461	120	600	0.7683	3.84	1
Remove unnecessary cost	115	208	102	0	11	436	120	600	0.7267	3.63	4
Improved functionality	60	208	156	0	4	428	120	600	0.7133	3.56	5

Table 2: Shows the relative important index

It represents the relative importance of the five groups of correspondents on the benefits of value engineering applications in construction projects in Lagos. This table shows that the strength of value engineering is that it enables an average of 3.84 innovative ideas. After that, maintenance was improved by an average of 3.69, efficiency was improved by an average of 3.68, and unnecessary costs were eliminated and improved by an average of 3.63. An average of 3.56 features and an average of 3.47 design improvements at the end. This shows that the main benefit of value engineering is to achieve profitability of construction projects, which is a strong demonstration of this.

VI. CONCLUSION

In this study, construction industry experts recognize the potential benefits of applying value engineering to construction projects, but conclude that this approach is not fully applicable to the construction industry. The need for application, the lack of the required talent and skills makes it difficult to apply the process, and the lack of control and control of alternative assessments reduces the potential benefits of a value engineering approach. Within the framework of the entire project.

VII. RECOMMENDATIONS

- Based on the literature review, survey analysis, and survey results, the researchers make the following recommendations: We conduct value engineering training seminars and workshops to introduce construction industry participants to the principles, concepts and techniques involved in value engineering courses.
- Nigeria's construction industry must adopt value engineering processes/analysis in construction projects to achieve cost effectiveness. iii.
- The proposed framework for value engineering practices should be adopted to facilitate alternative selection and evaluation.

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