Value Engineering and Reason of Unnecessary Cost in Construction Industry

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ABSTRACT

Value engineering is systematic method for finding and removing the unnecessary cost in any project or process or any construction industry for improvement the quality and function. For identification of the reason of unnecessary cost in construction industry the evaluated experiments is prepared, the result of this valuation was shortage of the information and lack of coordination between those memberships who has related with construction project that make most unnecessary cost in construction project. The value engineering consultant is responsible for coordinating the activities of the architecture-engineer and Construction Manager during the value engineering process. The value engineering is very useful for coordination with construction manager and architectural engineering for designing and scheduling and trying to suggest to construction manager for enhancing the required knowledge in administration and making decision in construction project.

INTRODUCTION

Value Engineering is a systematic process using a team from a variety of disciplines to Improve the value of a project through the analysis of its functions. The functional values of Transportation projects are usually determined through initial planning and scoping process leaving the improved value of a project to be realized through the value engineering process. The value engineering process incorporates, to the Extent possible, the values of design, construction, maintenance, contractors, state, local and federal Approval agencies, other stakeholders, and the public.

The purpose of this paper is to understanding of the definition of value engineering and identification of reason of unnecessary cost in construction industry, and also for development and applying and implementation of value engineering in construction. The purpose of the paper defines is also in minimizing the cost, development of projects, quality and function, optimization of resources, Significant Cost Savings avoidance, Transfer Innovative Technologies and ... etc.

In many of the construction projects the value engineering is not used very well, according to not being useful very well and value engineering, we lose the goals and achievements.

If we do not use the value engineering we reduce the quality of project.

In this paper trying to identification the reason of unnecessary cost for achieving the objective of value engineering to use it in construction project.

The most important and main point of view of this paper is definition and description of explicit and detailed value engineering for using the organization, owner, contractor and design engineer, then writing with simple language for understanding all of them about value engineering, and for using they do not have any problem because value engineering is a tool/method to enhance quality.

Value engineering is distinct by the Civilization of American Value Engineersl as “the systematic application of recognized techniques which identify the function of a product or service, start a value for that function, and provide the necessary function at the least overall cost. In all instances, the required function should be achieved at the lowest possible life-cycle cost consistent with requirements and/or performance.
maintainability, safety, and aesthetics.” Value can be increased by improving function and/or reducing costs. (Daniel Tyler, 2011).

**Methodology:**
In this research study we use a combination of different research methodologies including the standard research methodology and as well the ingenuity of the author for innovation of a new method to approach the answers of the research questions and obtaining the results and the particular outcomes of the study.

In this research initially we investigate meanings, concepts and description of the value engineering and quest different definitions for a detailed understanding like how to use value engineering in construction industry and how the value engineering saves the cost and also talking about the job plan phases.

Furthermore in this research review for reasoning of the unnecessary cost, determination and description are important reasons and also we try to explain how to remove all of them by using the value engineering in construction industry.

**Methodology Of Value Engineering**

**Value Engineering:**
Value engineering is a systematic method to improve the "value" of goods or products and services by using an examination of function. Value, as defined, is the ratio of function to cost. Value can therefore be increased by either improving the function or reducing the cost. It is a primary tenet of value engineering that basic functions be preserved and not be reduced as a consequence of pursuing value improvements.

To achieve the maximum and best results of value engineering, it should be performed at the earliest possible time; potential saving from value engineering application is greater than the earlier value engineering which has been already applied.

**Cumulative Value Engineering Cost Avoidance and Savings**
**Life-Cycle Costing:**

Life-cycle costing as part of value engineering is an approach used for ability attainment that employs a complete economic analysis of competing alternatives.

The analysis compares initial investment options and identifies least-cost alternatives for a project or acquisition over its serviceable or useful life span. Life-cycle costing examines the associated ownership costs of competing alternatives by discounting both the positive and negative cash flows throughout the facility’s service life.

**Using Life Cycle Costing With Value Engineering:**

The concept of economic analysis, which is used in life-cycle costing, requires that comparisons be made between things similar in nature. In value engineering all alternatives can be compared using life-cycle costing because the alternatives for each project component are defined to satisfy the same basic function or set of functions.

When the alternatives all satisfy the required function, then the best value alternative can be identified by comparing the first costs and life-cycle costs of each alternative. For many projects there is a viable sustainable development alternative or enhancement. Sustainable development may include more recycled material contents, require less energy or water usage, reduce construction waste, increase natural lighting, or include other opportunities that contribute to an optimal facility.

**The Value Engineering Job Plan:**

**Job plan phases:**

Value engineering is often done by systematically following a multi-phase’s job plan; one modern version has the following six steps...

**The Reason of Unnecessary Costs In Construction:**

For identification of the reason of unnecessary cost in construction industry and trying to remove them, the evaluation question prepared and it’s written in the 22 criteria. Reason then should transfer to some organizations, owners, contractors and some experts. The result of this evaluation question was the importance of reason for making unnecessary cost in construction project with lacking the information of manager or those who handle the project and by them unnecessary cost made and then the total cost will increase. Also with lacking of the information, the lacking of communication and coordination between the members of the project like owner and contractor and design manager and those who are related with project is second criteria for making unnecessary cost and finally Increase the total project cost.
**Shortage The Information:**
Inadequate data on the functions of the holder/user wants or needs information on new materials, goods and courses that it can encounter these needs, within the required cost range. Deficiency of information in constructions like defined one doesn’t have any information about application of material in construction.

**Deficiency Ideas:**
Insufficiency to develop alternate solutions. In many cases, decision makers accept one of the first workable solutions that come to mind. This tendency invariably causes unnecessary costs which can be eliminated by requiring the development of additional alternate ideas and then making choices based on economics and performance.

**Instantaneous Situations:**
A crucial transport, design, or schedule can force decision makers to reach a quick deduction to satisfy a time obligation without proper regard to good value. These impermanent measures frequently become fixed part of the design or service, resulting in gratuitous costs.

**Truthful Incorrect Politics:**
Unnecessary costs are often caused by decisions based on what the decision maker believes to be true, rather than on the real facts. Honest wrong beliefs can impede a good idea that would otherwise lead to a more economical decision or service.

**Variations Idea of User, Organization Or Owner:**
Often, the owner’s new requirements force changes during design or construction that increase costs and alter the schedule. In too many cases, the owner is not cognizant of the impact of the desired change.

**Shortage of Coordination:**
Lack of communication and coordination are principal reasons for unnecessary costs. VE opens channels of communication that facilitate discussion of subjects and allows the expression of opinions without undue concern about acceptability. Also, it creates an environment that promotes listening and responding to varying points of view without becoming defensive.
• **Outdated Standards and Specifications:**
  Many of the equipment and specifications in use in large construction programs are at least ten years old. As technology progresses, continual updating of data is required, but it is often not accomplished.

**Value Engineering in Construction:**
Value Engineering studies have added value to all types of construction projects to ensure added quality within available resources. Value Engineering studies on design build request for proposals (RFP) identify overly prescriptive conditions and contracting wording which cause a contractor to bid unnecessarily higher.

For the traditional design-bid-build type of procurements value engineering studies on the design have resulted in cost avoidance used in increasing the quality or reduce unexpected cost overages.

**Guide and Coordination with Design Architectural-Engineer and Construction Manager:**
The value engineering adviser is follower for organizing the activities of the architectural-engineer and Construction Manager through the value engineering process. The following is a list of items/services to be provided:
1. The value engineering consultant will suggest the architectural-engineer and Construction Manager of the schedule for the value engineering facilities.
2. Through the pre-workshop helping of the activity the value engineering consultant must suggest the design architectural-engineer of information requirements.
3. The value engineering consultant will provide adequate amenities for the workshop including payments for the architectural-engineer.
4. The architectural-engineer is expected to make a technical project performance at the start of each workshop.
5. The value engineering consultant will present an initial report of workshop proposals to the architectural-engineer on the last day of each workshop.
6. In the one to two week period following the issuance of the final report the value engineering consultant will coordinate with the architectural-engineer, Construction Manager and the PBS representative and evaluation the process of value engineering suggestions.

**Result:**
One the goals of this study is identifying the reason of unnecessary cost in construction industry. The result of evaluation was lack of the information about the construction industry details.

Second important reason which makes unnecessary cost is shortage of the coordination between the owner, contractor, architecture engineer, Supervisor and all of the membership who has related to construction project, this tow point makes Maximum unnecessary cost in construction project.

Value engineering also can added value to type of construction project ensuring.

Values engineering is very useful for coordination with design architecture-engineer and construction manager for coordination, scheduling and also effort to Recommendation the design Architecture Engineer of information requirements and making decision in so many items for success in the project and better understanding of the jobs.

**Conclusion:**
The value engineering program proves that it is not only for saving cost, it can be applied to all section of the construction industries. For improvement of the quality and managing the function in construction industry and any process, program. Value engineering reduces cost of the product; it is because of special attention which is given for simplification, standardization and improving method of production.

We conclude that value engineering is neither a different nor a sufficient way to design, but a parallel and necessary process for good conceptual design.

The performance measurement of value engineering studies in construction is required to ensure the confidence of clients and also to identify areas to improve. Consideration about the improvement of the information in construction industry includes Structures, materials, construction, management or any operation related to construction which has to be improved for avoiding any increasing in costs.

And also for development of the coordination between owner, contractor, designer, supervisor and all of the members who have any duties in construction project. Because of the lack of coordination there is a major problem and make unnecessary cost in construction industry according to the evaluated experiments.

It provides information to management regarding function wise expenditure on the product under their investigations.

Value engineering helps Architecture Engineer and construction manager in better understanding of their jobs, for coordination and scheduling and trying to suggest to architectural engineers for enhancing the required knowledge in designing.
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