

APPLICATION OF VALUE ENGINEERING FUNCTION ORIENTED APPROACH ON RESIDENTIAL PROJECTS

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Abstract: Value engineering is a professionally applied, function-oriented, systematic team approach used to analyze and improve value in a product, facility design, system or service a powerful methodology for solving problems and reducing costs while improving performance quality requirements.

Keywords: Value Engineering, Reduce Cost, Quality, Construction projects,

INTRODUCTION

Value engineering (VE) is a proven management method to enhance the "value" of project and services by using an analysis of function. Value is conventional concept which is being used from olden civilization but the management methodology approach on value principle is the new research concepts. Value concept can be stated as "an item is intended for a purpose, the user buys it for this purpose, and it is of value for him if it accomplishes the purpose efficiently, effectively, and well, at the optimum cost". Value engineering is a discipline comprising a techniques aimed at an organized, creative, cost search technique for analysing the function of a project, service, or system with the focus on achieving the required functions at the minimum overall cost satisfying with all the requirements that comprise its value, such as performance, reliability, and appearance. Value is a term often treated the same as cost on day-to-day usage. Nothing can be further from the truth. Cost is merely the consideration paid in exchange for products or service desired and the attempt is always to keep it minimum. On the other hand, the attempt is always to maximise the quality and the standard of the product or the service required in exchange for the cost. These two objectives—maximizing satisfactions and minimising the cost-have been realised which will determine how well value has been secured.

OBJECTIVES OF THE STUDY

The main Objective of this paper is study is the application of Value Engineering on construction project by 'Job Plan' method.

NEED OF THE STUDY

A large amount of expenditure is being incurred in projects, both in public as well as private sectors. About 50% to 55% of the total Plan Out lay of the Government of India is spent on

construction activities, and Value Engineering is one of the way to obtain the full 'VALUE' for the money we spent, avoiding all unnecessary cost. In number of Value Engineering situations the possible consequences of a decision are characterized by more than a single attribute or criteria. This makes evaluation complicated as the alternative consequences are ranked according to subjective preferences of the individual or the decision-making committee.

VE METHODOLOGY

The research methodology using a value engineering job plan method contains included a literature search and interviews. The literature review was conducted through literature paper, articles, manuscript and books. Based on a reducing cost, Quality and value engineering are used.

1. Information Phase
2. Function Analysis Phase
3. Creative Phase
4. Evaluation Phase
5. Development Phase
6. Presentation Phase

1) Information Phase: At the starting of the Value Engineering Study workshop, it is significant to appreciate the background and decisions that have prejudiced the development of the project design. Because of this, the Owner and Designer present an oral outline of the design. This presentation usually contains: the history of the project; the rationale for the design; project constraints; site conditions; factors influencing decision making; and the reasons for selecting the process equipment or major materials or systems for the project. Also, project costs and schedule data are discussed. Subsequently, each team member familiarizes himself with the project documents. The information phase also includes preparation of the cost and energy models from cost data assembled before the workshop began. These models are updated based on information received during the Designer's presentation. The Value Engineering team then reschedules the low quality area and the high cost area and sets target quality increases and cost saving.

2) Analysis Phase: The techniques used in this Phase are vital to the Value Engineering team because it forces the team to think in terms of functions and the costs related to each of the functions. Formulating the function analysis helps to generate many of the ideas that ultimately result in endorsements for project upgrading and/or cost savings. The Higher the cost/worth ratio, the greater the potential for determining and emerging cost savings. Worth is applied based on the premise of finding the least cost to provide the required functions. This forces the Value Engineering team to come up with alternative explanations to the proposed design. The functional understanding establishes the base case to identify and standard substitutes and disparities, and set the agenda for revolution.

Value Engineering Activities:

- Recognize function of the project schemes and components.
- Recognize high probable SC issues to be deliberated

- Categorize the function.
- Improve function model.
- Excellent function to emphasize the creativity phase.

3) Creative Phase: This phase of the Value Engineering process encompasses the cohort and listing of creative ideas. “During this time, the Value Engineering team thinks of as many ways as conceivable to deliver the essential functions contained by the project”. “The creative idea listing for the group and notes from deliberations between the Value Engineering team members and controller/frontrunner are encompassed in the Value Engineering workshop report”. Distinct teams classically have isolated creative phase report sections. During this phase, judgment of the creative ideas being developed is limited, and preferably is not present at all. The Value Engineering team is looking for the extreme quantity of ideas, which will consequently be evaluated, in the next phase of the study. “This issue is one of the most inspiring for Value Engineering team members and contributors”. Many of the ideas carried out in the creative phase are a result of work done in the function analysis and pre-study efforts.

Value Engineering Activities:

- Creative ideas generation.
- Establishing rules and standards that protect the creative environment and is readily adoptable resulting positive productivity.
- Generate supplementary ideas that may enhance value.

4) Evaluation Phase: In the evaluation phase of the workshop, the Value Engineering team evaluates the ideas based on adoptability developed during the creative phase. The Value Engineering team ranks the ideas. “Ideas found to be less worth or not worthy of additional study are omitted; those ideas that represent the greatest potential for cost savings and enhancements are selected for development”. “A based evaluation is applied in some cases to account for project impacts other than costs (both capital and life cycle)”. Ideally, the “Value Engineering team would like to evaluate all attractive ideas but time restraints often limit the number of ideas that can be developed during the workshop”. “As a result, the team emphasizes on the higher ranked ideas this phase is designed so that the most significant ideas are isolated and prioritized”.

Value Engineering Activities:

- Build shared sympathetic of all ideas.
- “Deliberate how ideas affect project, cost, and SC performance parameters”.
- Inaugurate evaluation criteria.
- “Rank, select, and prioritize ideas for further development”.
- “Explain how ideas are to be written up as standalone risk-reward investment proposals”.

5) Development Phase: “Through the development phase of the Value Engineering study each designated idea is prolonged into a workable solution”. “The development contains of the recommended design, capital and life cycle cost comparisons and a expressive evaluation of the advantages and disadvantages of the proposed recommendations”. “The selected ideas are established into proposals that are clearly written so that the owner and other project stakeholders understand the intent of

the proposal and how it benefits the project, and also to identify any potential negative factors associated with the proposal". The proposal should include text, sketches, diagrams, secondary calculations, cost evaluation, and other information which may be necessary to convey the intent of the proposal. "Issues addressed include sustainability, consistency, customer suitability, quality control, initial cost, running cost, life cycle cost, schedule, risk, availability, political consequences, and awareness".

Value Engineering Activities:

- "Prepare a written proposal of ideas selected for further development".
- Assess and refine SC issues.
- Conduct benefits analysis.
- "Generate sketches and information needed to convey the concept".
- Confirm that a proposal should be further developed.
- "Estimate the cost difference of each Value Engineering Proposal".

6) Presentation Phase: The sixth phase of the Value Engineering study is the presentation. The Value Engineering suggestions are typically screened by all Value Engineering members before presentation to the workshop personnel. That spectator typically consists of the owner, end user, designer, consultants and stakeholders representatives. Final Value Engineering proposals are presented orally during the workshop and in the written report. The Value Engineering team leader and/or team members describe the recommendations and the rationale that went into the development of each proposal. Value engineering worksheets and a summary of the Value Engineering results are given to the Owner or Designer at this time in draft format. This begins the evaluation by the Owner and the Designer of the Value Engineering report recommendations.

Value Engineering Activities:

- "Prepare presentation and supporting documentation".
- Exchange information with the project team.
- "Ensure management has full and objective information upon which they can make good decisions".
- Outline an anticipated implementation schedule.

CONCLUSION

- Value Engineering is a powerful approach for cost saving and quality improvement.
- "Value Engineering is a proven management technique used to identify alternative approaches for satisfying the requirements of a project while lowering costs and ensuring".

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