

## Value engineering: Cost-effective in construction process

Value engineering will enable players to develop new methods and techniques along with increasing productivity, cost reduction, better performance, high quality, simple design (civil, structural, mechanical, etc.) and optimum project duration without affecting function of the project or service analysis

Value engineering, as the name suggests, is a systematic approach to reduce construction cost while ensuring superior quality of the product for the end-user. It primarily focuses on promising low-cost construction without compromising on quality.

In this kind of development the costs related to construction, design, maintenance and replacements are considered. The rationale behind value engineering is to avoid utilizing higher-grade components in order to cut down unnecessary cost of the construction process. However, this process does not involve compromising on the value and quality of the end product.

It is a creative approach which has been proved effective in the construction scenario, and should be implemented at all levels of project management worldwide. The term 'value management' is widely used in India instead of 'value engineering' as it covers most management functions rather than being focused only on engineering techniques.

### Scope of construction industry

India's construction sector is assessed at Rs 4,000 billion or \$100 billion. The country is ranked Number One among the top 10 spending nations on the construction sector

in the world. Production of cement is more than about 250 million tons in India. A report on 'Global Construction 2025' estimates that China, India and the United States will account for almost 60 per cent of global growth of the construction sector.

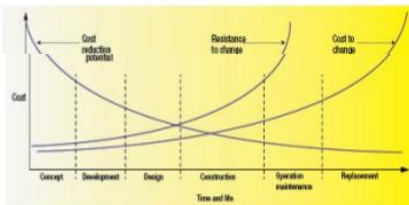
The Government of India is spending 9 per cent of the GDP on various infrastructure projects. According to the Future Market Insights in the report titled, 'Construction Chemical Market: India Industry Analysis and Opportunity Assessment 2014 - 2020', the Indian construction chemical market will exhibit a CAGR of 17.2 per cent. The market is projected to reach

it is expected to boost the demand for construction chemicals in the near future.

The infrastructure sector is likely to grow at a CAGR of 18.3 per cent. According to Future Market Insights report, chemical market has shown a steady growth of 16 per cent by 2020 with the residential and commercial segment comprising 34 per cent in the overall Indian construction sector. This trend is highly favourable for the industry players offering tremendous scope for innovation and development.

### Decoding Value Engineering

Value engineering is an effective



\$1,890 million by 2020. Some prominent trends observed in the Indian construction industry comprise the chemical market increasing investment in R&D, adoption of sustainable products, entry of new players and technological advancements. With rise in construction of new buildings and renovation activities across India,

way of cutting down the cost and adopts different techniques in order to achieve far greater results. The starting point for value engineering is to isolate the cause behind high cost which helps in devising effective strategies and analysing the ways for cost management.

It is commonly seen that around 15

as possible to achieve a project's function.

4. Evaluation: It examines all of the ideas generated during the creative phase and narrows down feasible alternatives.

5. Development: Under this phase the team takes feasible



per cent to 25 per cent of the budget could be saved by adopting this initial step. In the construction industry, value engineering is a systematic way which is implemented during the stages of planning, design and construction.

Value engineering has the potential to be used in various projects and has proved beneficial, especially in more complex and higher value projects. Experts have observed that the cost can be significantly reduced in the initial stage of design.

If the value concepts are implemented in the concept stage, the savings will be higher. Strategy and planning are emphasized in the early stage because the scope of cutting down cost will keep decreasing as the project progresses.

For example, in hospital construction, the tests which need to be carried out in two rooms of the dimension 30 m2 would be inappropriate, but carrying out the same tests under one room of area 45 m2 would be beneficial.

By following this method both the technician's cost and the cost of construction will be saved. If this is understood and implemented during the phase of briefing, the amount saved will be higher. This could be clearly understood by looking at the graph on this page, which highlights the phases of construction in the X-axis and the cost in the Y-axis.

### Value analysis

The initial step in any value analysis is to create a value methodology job plan. This model is actively used by Save (the Society of American Value Engineers) International and is divided into 6 phases:

alternative and prepares information such as sketches, narratives and specifications to improve the value of the project.

6. Presentation: This phase involves presenting the value recommendations to stakeholders of the project.

At Expat Engineering (I) Ltd (EELI), we are evaluating various value engineering techniques for our upcoming projects across India. A few of the techniques we intend to follow are:

\*Various types of formworks that provide us benefit over conventional formwork, where we save on time, cost (in the long run) and ensure high quality.

\*Different kinds of industrialized housing construction technologies, which have huge benefits over conventional construction techniques.

Investment in the construction sector and ongoing infrastructural developments in India has made this a crucial industry segment. Apart from the huge investment associated, the construction sector also has a variety of construction projects involving stakeholders, materials, construction management techniques, etc.

### Develop new methods & techniques

All of these sectors widen the scope of application of value engineering/management. Considering the attributes and scope of the Indian construction industry, it will be beneficial to have more value engineering studies. This will allow players in the sector and other industry players to identify and overcome various loopholes faced during a construction process and



1.The information phase: This phase involves assembling all the available information about the project in order to develop a better understanding of what elements are involved.

2.The function analysis: It involves elaborating functions of every element and component of a project to develop a detailed analysis of what the project is supposed to accomplish.

3.The creative phase: This phase is part of a brainstorming effort that evaluates as many alternate means

overcome the same through adopting creative alternatives.

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India's growth rate is expected to rise to 7.5 per cent this year and next, making it one of the fastest growing economies in the world, according to the IMF's latest economic health check. Financial aspect plays a vital role. Hence, constantly innovating and saving capital in the construction process can be diverted and used in other sectors for the overall development of the nation.



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