

THE ROLE OF VALUE ENGINEERING IN CAPITAL ACCUMULATION AND SUSTAINABLE URBAN DEVELOPMENT

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ABSTRACT

The success of the project managers to make decisions based on systematic approach in terms of time and budget to achieve the objectives and expected outcome of the project will depend on the guarantee. Basically, "a project must comply with the requirements of the market economy and is consistent. The economy has a key role in the project life cycle. So the economic efficiency and quality efficiency, necessity requires the application of value engineering to identify unnecessary costs and providing strategic factors, the project targeted leads. The main objectives of value engineering to optimize time to achieve the operation, without adding to the cost or reduce the quality of the projects is subject to the principles and standards that lead to management to optimize resources, investment plans and excellent results, particularly in the increase in quality. In the process of value engineering to the objectives, risks and important indicators of the project and reduce implementation time and costs, improve the indicators of quality, safety and the environment, increase the quantity and quality of facilities and enhancement of the operation. Look strategic real sanctions employers and develop a way to achieve this.

KEY WORDS: strategy, economics, optimization, development, investment

INTRODUCTION

Application of value engineering in the management of urban projects due to the complexity of the project can be wonderful tools to detect and remove any items that cost is unnecessary and a waste of time to be without harm to the basic functions of project .In other words, the implementation of value engineering project management framework, the possibility to provide that attention to all components of the project, not assumed any part of the project ascertained and always optimal time to get to the operation of or without the addition of cost reduce the quality, the goal is to come (Messenger et al.,2007).Meanwhile, value engineering is one of the management tools and techniques that empower creativity using an expert team that seeks to raise the index value of the project (service).The value engineering seeks to create a balance between resources used in producing a product (service) and performance of its business and is trying to identify and remove unnecessary functions (Sarang et al.,2008).In recent decades, industrialized countries and the developing and even the neighboring countries of Iran, the application of value engineering, in order to save costs, have understood and diligently seek to reduce unnecessary costs to the (theoretical and colleagues,2010).

For these countries, the use of value engineering, have been able to optimize their resources in investment projects, in addition to the desired results in terms of capacity and quality of their production .So the need to adopt appropriate strategies for sound management, stabilization and continuity in project value engineering with efficient use of resources and avoid wasting them as capital available, is clear and the role of economic value engineering and its application in various community decision-making and decision-maker plans engineering, and expression causes its application is particularly important, because it will focus on the improvement and problem-solving techniques, can be very effective ways to solve problems and plan projects achieved. One of the goals for the successful application of value engineering, technical as the analysis of structured and creative functions of a product, service or system to achieve the expected performance at the lowest cost over the life of the project takes steps to identify the best time effectiveness and its use is fundamental rules (Ale Rasoul, 2008). An urban project in a sensitive and specific and may be required the city's needs for sustainable development of the global cause of human rights has become the accepted form. In this study, library studies in the fields of engineering, value, capital accumulation, economic and financial development and the most important criteria in the necessity of integrating them, evaluate them has been paid, then the reasoning and analysis, and evaluation criteria. Finally, the implementation of value engineering solutions to increase productivity and economic growth and capital accumulation, is expressed.

Theory and literature Review

▪ Value Engineering

Value engineering as one of the most efficient and most economical method known in the field of engineering is defined as follows:

implementation of activities at a lower cost and shorter time so that provides quality, safety, reliability and maintainability of the design is maintained at the same level or rise (Oil and Gas,2009).In fact, one of the most effective tools for achieving the plan with the lowest cost, with the assurance scheme, utility, capability of maintenance and preservation work is quality (Asadollahi,2011).Historically, uninterrupted human quest for lasting prosperous consumption of resources, both born and has been aligned .Of those, the chronology of history, moments that human efforts to help the creativity and innovation a turning point for the improvement value is determined .Understanding the formation of such moments fair to judge any innovation is essential .The ways to prevent unnecessary use of resources and reduce the cost of Frederick Taylor's time and the use of scientific management to do things better, faced with a profound change. Gylbrtz time work with study and Henry Fayoll by asking the Department of Labor, these methods are developed .Miles further development in this field with efforts to eliminate unnecessary costs to the achievement of performance-based and use the benefits of teamwork led to the "value engineering" was the name of the (Arab et al., 2010).

In recent years the scope of application of value engineering to optimize the implementation of the strategic plan and go beyond macro-projects has also use. The following are examples of successful performance engineering value.

America's Army claimed -by using value engineering savings over 13 years has totaled \$ 600 million. In 1996 in the United States more than \$ 20 billion in savings by changing the proposal was reached.

- Only in a local road administration between 1991 and 1993 was more than \$ 460 million savings that reward contractors was \$ 158 million. In a contract of close to \$ 98 million reward save that \$ 50 million was followed by contractors.

The first study of value engineering techniques to America Department of Defense in 1965 to determine the resources and opportunities to do value engineering. The aim of the study is to identify and determine the amount and scope of value engineering, with a sampling of 415 successful change of value engineering studies. Engineering studies revealed that the Ministry of Defense always on a number of factors, and not just on special agent, effect. While these changes rarely occur as a result of faulty design modification. Speculation over again in projects, to find defects and bugs are very few opportunities for improvement and provides value (Golshan *et al*, 2008).

▪ The urban economy:

The urban economy is one of the specialized fields of the economy in which economists try using economic tools, issues and problems of a review and evaluation of the urban area. In the urban economy, trying to be that issues relating to the allocation of production factors and the actual income distribution within and between urban areas, to be explained scientifically. In other words, how the production and distribution of goods and services, not just within a city, but also between cities can be checked (Darkush, 2011).

3. The development of hypotheses and model

The city is one of the centers of capital accumulation, the built environment is a geographic concentration of fixed assets or immovable property made in the form of physical and urban forms of expression have been formed. means of production, including buildings, plants, machinery, raw materials and fuel in place "(Luntif, 1982), which focuses on the city and its surroundings and creating employment base and consequential damages, and settlement activities, production and consumption, the space agency will focus, to be more precise urban built environment "is a complex product composed of many different elements-the roads, canals, harbors and ports, factories, warehouses, sewage outlets, offices public, schools, hospitals, houses, offices, stores, etc. Each of the projects and the need for improved economy and economic value, but quite different in terms of a statute are created ... and as set In connection with the accumulation processes of production, exchange and consumption "(Harvey, 2002).Perhaps on the basis of the characteristics of cities that Robert Park, founder of Chicago "in the workshop of human civilization" is called (Azimi,2005).The workshop is in the process of human civilization to their potential and value engineering has a crucial role appears to affect project.

And designer at this stage in their decisions more flexibility and less impact on the project schedule has changed. So whatever the project life time passes the less the cost reduction potential (Pars Oil and Gas, 2009).

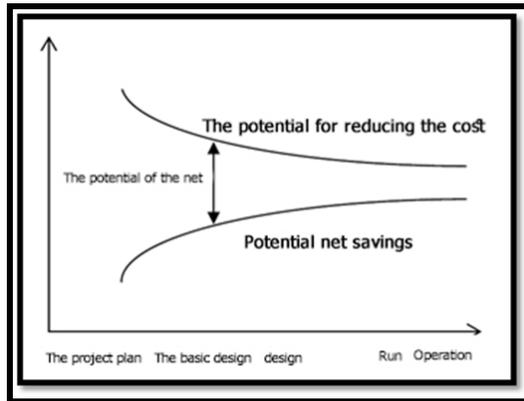


Figure 1. Relation of Project schedule and cost

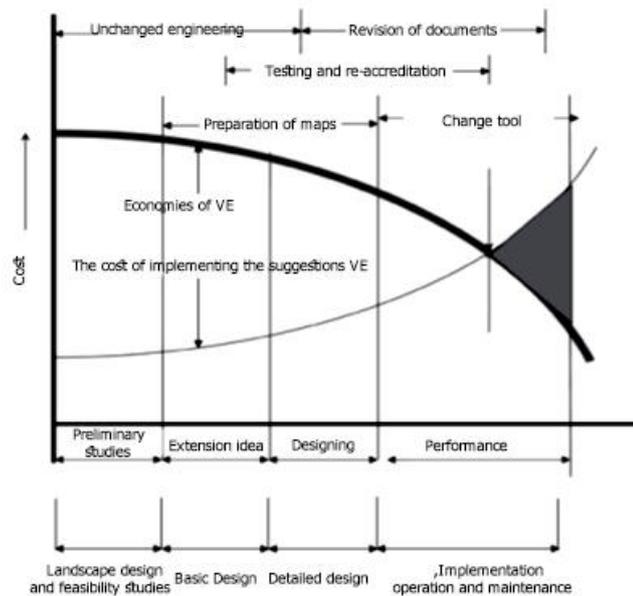


Figure 2. The best time to enter the value engineering

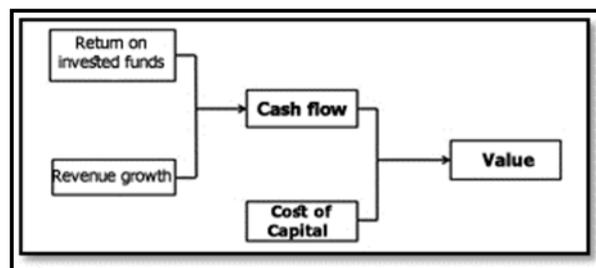


Figure 3. Driving value growth and return on invested funds

The value of such studies at all stages of identification, feasibility, design, procurement, implementation, construction and maintenance, is applicable, but the major effect of 30% of the value of the progress of the project begins. Similarly,

the needs of employers, standards, design and consulting as well as project contractors and increase project costs have a greater impact on reducing (Ale Rasoul, 1387).

At the same time, the changes can be done easily, cost too much notice of the project. These changes can be applied at low cost and also pose a significant saving. Value engineering as a way of improving their specific business plan template and a step to solve this problem provides. The conversion of earnings to cash flows is based both on two factors: return on invested funds and income growth. This means that the value added at the end to return the invested funds, income growth and, of course, be maintained over time depends on the (Cooler, et al.,2012), value engineering methods to help optimality of these costs is. In figure 3, the value is shown. Value engineering is based on the first check data and then analyze it. The meetings with the agents and relevant stakeholders to design new ideas hold. The quantity more important than quality in their designs. The cost and time-saving project is done (Ehrari,2000).Value engineering study done in steps called work program. Orientation of value engineering is reflected in the work program. The formula agenda executive team during the value engineering process from start to finish guide. Work program consists of three main steps. The main stages of the study before the study, original research and graduate study, including six phases of data, functional analysis, creativity (concept finding), evaluation (judgment), is developed and presented. Table 1 shows the process steps work program (Arab et al.,2010).

Stage	Steps
Advance study	<ul style="list-style-type: none"> ▪ Data collection ▪ Set the foundations of the study (including the objectives, goals, value engineering study to identify issues and opportunities, recognizing detail of plan, determine the limits of the employer) ▪ Prepare cost model ▪ Determine the study team members
The main study	<ul style="list-style-type: none"> ▪ Information ▪ Performance analysis ▪ The ideas issue ▪ Assessment ▪ The development of ▪ Provide
Supplementary study	<ul style="list-style-type: none"> ▪ Complete change proposals ▪ Implementation of proposed changes ▪ Keeping track of changes

According to the different perceptions and partially wrong than to function and value engineering approaches and attitudes to it as a tool to design and revision practice or merely reducing the cost-saving and briefly provide an overview of the paid value engineering (rasouli, 2007). Company's cash flow to invest in the future by creating more cash flow to create value for its owners. Value created per investment is the difference between the adjusted cash flow inlet and outlet because the time value of money and risk-adjusted, it is necessary to clarify the future value of cash flow less cash flow today is tomorrow (cooler *et al.*, 1391). You can use a template, value engineering process used in project management. We have studied the best possible strategic management and applied it.

The framework presented in the following graph is a comprehensive model of strategic management is very common and is acceptable. The model to develop strategies, implementation and evaluation provides clear and practical way. In this model, the relationship between the main components of the strategic management process is shown (Fardar, 2009).

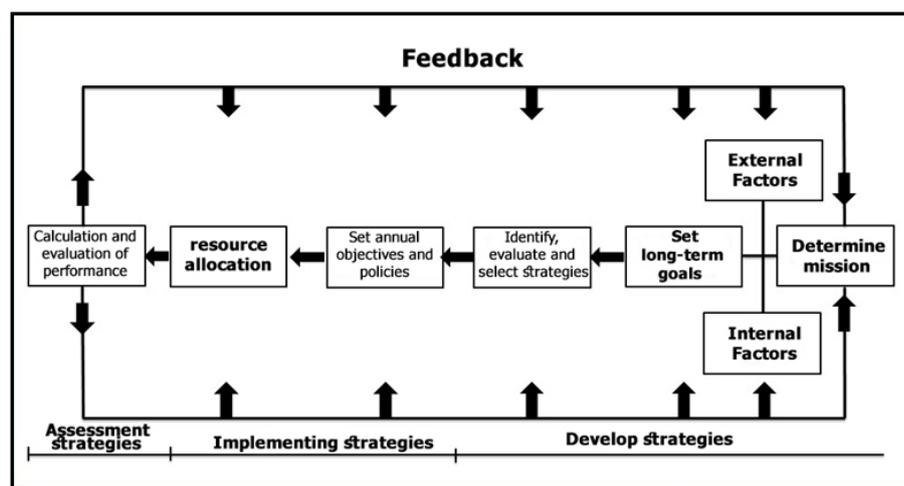


Figure 4. A comprehensive strategic management pattern

So what they say goes, to attain the objectives of this study should step strategy that includes research and planning phase, long-term goals of the project include optimizing time to operation, without adding the costs or decrease the quality is examined. And costs, improve the indicators of quality, safety and the environment, increase the quantity and quality of facilities and enhancement of the operation.

CONCLUSION

- In general, value engineering process and procedures at more levels of the organization, including senior management, is a good place. Value engineering an effective way to improve project performance or reduce unnecessary capital costs and operation is known.
- Competent and experienced team leader and experts, including key elements of value engineering studies. Early in the process of value engineering the project to be used more efficiently and effectively the performance, quality and cost of the project.
- It is necessary to measure the benefits of value engineering studies (less costs to improve the performance or longevity) and successfully defined value engineering studies.
- continuing education programs to maintain the incentive value engineering, value engineering studies are essential for organizations to allocate resources. However, educational programs, more affected by the general fund transportation projects.
- Value Engineering can effectively improve management with other technical approaches, such as asset management, road safety audits, design environment and accelerate the construction of integrated teams.
- Research model, can be a practical scientific approach to determine indicators and the realization of the establishment of value engineering in the optimal management that leads to economic development.

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