
Analysis on the Performance of Government Investment Project Management Based on Value Engineering

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To cite this article:

Xiao Yuchun. Analysis on the Performance of Government Investment Project Management Based on Value Engineering. *American Journal of Civil Engineering*. Vol. 10, No. 6, 2022, pp. 221-224. doi: 10.11648/j.ajce.20221006.12

Received: October 6, 2022; **Accepted:** November 16, 2022; **Published:** November 29, 2022

Abstract: Government-invested projects are characterized by large investment scale, high difficulty in project management, complex stakeholder relationships, high social concern, and the sustainable impact of project products on society. Multiple attributes should be comprehensively considered when evaluating their performance. In order to improve the efficiency of government investment project management and the service efficiency of funds, by building a set of scientific and reasonable, strong applicability management performance evaluation system, to achieve an accurate measure of government investment project management level, and then put forward targeted improvements, is the important way to improve the performance of government project management. According to the characteristics of government investment project management, this paper discusses the compatibility between it and value engineering and puts forward the basic idea of applying value engineering theory to evaluate the performance of government investment project management. The results show that the value engineering management idea and the government investment project management have commonalities in management essence, management purpose, management operation mechanism, management means and management foothold. Thus, it expands the idea and provides a new method for the evaluation of government investment project management performance.

Keywords: Government Project, Value Analysis, Management Performance

1. Introduction

Government-invested projects are characterized by large scale of investment, high difficulty in project management, complex relationship between stakeholders, high social attention and sustainable impact of project products on society. Multiple attributes should be comprehensively considered in performance evaluation of government-invested projects [1-4]. But the existing government investment project performance evaluation more pay attention to economic benefits, social or environmental benefits, such as unilateral evaluation, failed to consider project within a variety of system characteristic of correlation function, make the government investment project performance evaluation is in a state of assessment results lack credibility and instructive, not for increasing the service efficiency of government investment projects of capital and resource allocation efficiency of direction [5-8]. As a project management method based on function and cost, value engineering can comprehensively consider the technical and economic requirements of the project, effectively control the

cost under the condition of ensuring the expected quality of the project, and coincides with the purpose of performance evaluation of government-invested projects [9]. Therefore, this paper introduces the management idea of value engineering in order to provide a more scientific and effective guidance method for the performance evaluation of government investment projects.

2. Connotation of Performance Evaluation of Government Investment Project Management

According to the above description of the connotation of government investment projects and related theories of engineering project management, the development of performance evaluation of government investment projects management can be expressed as starting from the system point of view, according to the established targeted evaluation index system, A mathematical evaluation model with strong

fit and applicability is adopted to accurately and reasonably integrate the characteristic information of government investment project management, and judge the management level of the project according to the set evaluation standard, and finally put forward the orderly process of improvement opinions.

This article will be the subject of performance evaluation of government investment project management to carry out the setting of construction project investment of the government or the government investment project construction unit, the evaluation content for the management level of government investment project, evaluation purpose is through the particular strong mathematical assessment model of government investment project management level and efficiency of investment decision, Then put forward the effective improvement of the government investment project management effect of the suggestions to provide reference for the subsequent project construction.

The public attribute of government-invested projects determines that when evaluating the management performance of government-invested projects, we should not only evaluate the management activities in the process of project ontology construction, but also comprehensively consider the expected social, ecological and economic benefits generated by project construction.

3. Necessity Analysis of Performance Evaluation of Government Investment Project Management

It is imperative to evaluate the management performance of government investment projects. The following will discuss the necessity of its development from four aspects.

First of all, the management subject has particularity. The management subject of this type of project is the government. If the investment government does not set up relevant departments to manage the investment project, it is easy to lose the main body. Usually, the investment department will transfer the command of the project to the subordinate professional department or the agent construction unit to implement the management of the construction project, but the construction risk is mainly borne by the government department, and the power and responsibility are not equal. Therefore, in order to ensure the smooth implementation of construction projects and the reasonable application of construction resources, the management performance evaluation of government-invested projects should be carried out.

Secondly, the source of funds is special. The investment source of government investment projects is generally local government or public funds, without the pressure of general projects to increase the value and maintain the value and repay the capital and interest [10, 11], which makes the project investment lack of planning, lack of constraints on capital investment, and easy to appear "three super projects". Therefore, in order to strengthen the internal and external supervision of capital input and improve the fund utilization

efficiency of government investment projects, management performance evaluation should be carried out.

Moreover, quality control is special. Different from the general types of projects, government-invested projects have higher requirements on the professionalism and functionality of project construction, and often need to control multiple key quality points in the process of project construction. Based on this, the evaluation of the management performance of government investment projects is conducive to the evaluation of the professional ability of the existing participating units, and provides a reference for the selection of construction parties of subsequent government investment projects.

Finally, project stakeholder relationships are complex. Government-invested projects have the characteristics of large scale of investment, large capital investment and wide spread scope. Therefore, government-invested projects have many participants, and the different ways of cooperation of each participant in the project have different influences on the process of project management [12, 13]. In view of this, the evaluation of government investment project management performance can help to sort out the influence trend of project stakeholders on project management, guide stakeholder management to get closer to the overall goal of project management, and strengthen the consistency of project management objectives.

4. Basic Connotation of Value Engineering

Value engineering, also known as value analysis, is a system of management thought proposed by American engineer Miles to realize the close combination of technology and economy. Its definition can be briefly described as an organized creative activity committed to realizing the necessary functions of products at the lowest life-cycle cost. After it was introduced into China in 1978, it was defined in the national standard GB8223-1987 Basic Terms and General Working Procedures of Value Engineering by combining with the current economic situation and the current national conditions as follows:

Through the cooperation of various related fields, the function and cost system of the studied object are systematically analyzed, and the thought methods and management techniques aimed at improving the value of the studied object are constantly innovated.

Due to the differences in economic system and social environment and the deepening application of value engineering in various fields, definitions of value engineering emerge endlessly [14, 15]. However, as a widely recognized management tool in various industries, its basic connotation is consistent, which can be summarized as follows:

- (1) Value engineering starts from the functional needs of users and summarizes the necessary and unnecessary functions of products according to the analysis results of the degree of demand, focusing on the realization of the necessary functions;

- (2) Value engineering seeks to achieve the necessary functions of the product with as little resource consumption as possible, and to achieve the optimal product value under the condition that the product quality is guaranteed;
- (3) Value engineering is a creative activity that is carried out in the production cycle of products and needs cooperation from various parties to improve product value in an organized and planned way.

5. Compatibility Analysis of Value Engineering and Government Investment Project Management Performance Evaluation

Government investment project is the demand carrier of government departments, public groups and other stakeholders. Compared with other projects, the cost control is stricter. Government investment projects focus on the realization of social benefits such as resources, environment, security and services. Based on this, the performance evaluation of government investment projects needs to have a scientific measurement of the relationship between project construction quality and resource consumption. Coincident with this, the value coefficient of value engineering can be just calculated by the ratio of function and cost, and has been effectively used in related fields. In order to further investigate the feasibility of value engineering in the performance evaluation of government investment projects, this paper makes a simple theoretical analysis of the compatibility between the two through the following aspects:

- (1) In a broad sense, the management performance of government-invested projects can be understood as the input-output ratio of project management, which is consistent with the ratio of functional cost of value engineering to represent the management efficiency;
- (2) Value engineering realizes the dynamic balance of management through the unity of opposites between function and cost, while the government investment project achieves the final management goal by coordinating the input-output ratio. Both of them ensure the effectiveness of management activities according to the restriction relationship between the two elements, and they have common characteristics in management essence.
- (3) When value engineering is applied in construction projects, its functions can be formed through orderly and reasonable management activities. Therefore, both the project functions based on value engineering and the output of government investment projects can be reflected through management performance.
- (4) The management purpose of value engineering is to pursue the best matching degree of function and cost, which is similar to the government investment project management's pursuit of limited investment to achieve the success of project construction quality. Both of them

seek the equilibrium point of input and output as the management purpose.

- (5) Both value engineering management and government investment project management performance seek satisfactory solution rather than optimal solution. For a single research object, the value engineering principle does not blindly pursue the optimal value, but takes $V=1$ as the best completion standard of the project. Government investment project management does not pursue the maximization of investment efficiency, but the purpose of management is to complete the necessary functions of construction projects with reasonable resource consumption, so both of them pursue the maximum satisfaction.
- (6) The functional indicators in value engineering can include HSE, ecological benefits, social benefits and economic benefits and other factors, so as to make the development of management activities more consistent with the concept of sustainable development, which coincides with the original management intention of government investment projects to pursue public interests and maintain social sustainable development.
- (7) Value engineering emphasizes the creation of more perfect programs based on the original program evaluation and the management performance evaluation of government-invested projects is also expected to point out the direction for the subsequent similar projects to break through the original management limitations and use more reasonable management methods on this basis. To sum up, the idea of value engineering management applied to the performance evaluation of government investment project management has good applicability.

6. Conclusion

The thought of value engineering management and the government investment project management have the same characteristics in management essence, management purpose, management operation mechanism, management means and management foothold. Based on the same management characteristics above, this paper analyzes the compatibility between value engineering management concept and government investment project management, which lays a good foundation for innovating government investment project management mode and broadening project management thinking.

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