

Research on the Path of Rationalization Suggestion to Enhance Project Value under EPC Mode

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Abstract. The EPC model is increasingly being valued as a general contracting model. Due to the characteristics of the EPC model, the contractor needs to bear most of the risks. The high risk should match the high returns, so the contractor often Rationalization suggestions are proposed through their own technical level in order to achieve income generation. However, how to improve the value of the project for the identification and rationalization of rationalization proposals needs to be further clarified, so that there are many controversies in judging the rationalization proposal, so this paper rationalizes the EPC model. It is suggested that the path to enhance the value of the project should be studied, and it is hoped that the rationalization proposal can be clearly defined to help the owners and contractors to define the path of value added.

Keywords: EPC mode; Project value; Rationalization proposal.

1. Introduction

Although the EPC model has brought great convenience to the owners, it has brought considerable profits to the contractors, but it is undeniable. In the EPC mode, the contractor bears most of the risks. Since the project adopting the EPC contracting package model is a project with complex projects and high investment, some contractors often give up in order to win the bid. Part of the profit. For an ordinary general contractor, if there is a mistake in a project, there may be a step in which all the mistakes are lost. This is undoubtedly unfavorable for the development of the enterprise, so the contractor usually needs other means. increase profit. Since the EPC model generally adopts a fixed total price contract, the contractor wants to generate income very limited. The limited method includes the proposal of rationalization to enhance the project value and share the benefits, but the rationalization proposal is in the actual project. There are still many problems in the application.

2. Definition of Project Value

Project value is a frequently mentioned term in the field of engineering management. The judgment of project value includes many factors. Different projects, different stakeholders, and different project success criteria can be factors that affect the value of the project. These difficult factors determine the value of the project is different, so it is quite difficult to reach a consensus on the content and definition of the project value.

From the relationship between project value and project success criteria, stakeholder value, and stakeholder and project success criteria, the link between stakeholder success criteria and stakeholder value and project value and project success criteria can be inferred. Similar [1]. The relationship between project value and the above-mentioned stakeholder value, project success criteria, and stakeholder success criteria is shown in Figure 1.

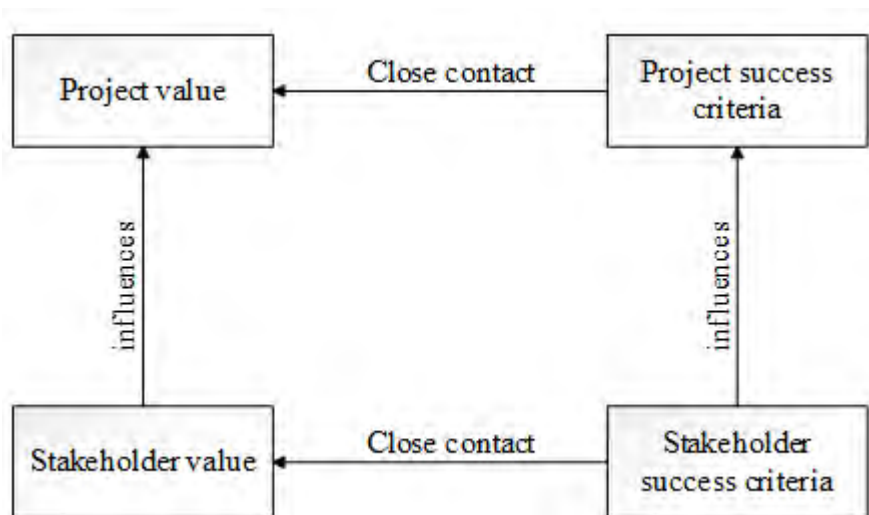


Figure 1. Project contact and impact

3. Definition of the Scope of Rationalization Recommendations under the EPC Model

3.1 Rationalization of the Conditions for the Establishment of the Proposal

FIDIC “Silver Book” Section 13.2 stipulates: “A contractor may submit a written proposal to the employer at any time to raise (he believes) Will: (i) expedite completion, (ii) reduce the cost of the employer’s construction, maintenance, or operation, and (iii) improve the employer’s completion efficiency or value, or (iv) recommendations for other benefits to the employer.[2] Model Document for Construction Project General Contract (Trial)”(GF-2011-0216) Section 13.1.3 stipulates: “The contractor is obliged to submit written change proposals to the contractor at any time, including shortening the construction period, reducing the cost of the contractor’s engineering, construction, maintenance and operation, and improving the efficiency of the completed project. Or value, bring long-term benefits and other benefits to the contractor.” FIDIC and China’s contract model have the same effect on rationalization proposals, whether it is to speed up the completion, reduce engineering costs, improve engineering value or bring to the owner (contractor) The other benefits are the added value of the project value. It can be seen from this that the effect of rationalizing the proposal is the value of the project. The value added of the project can be used as a necessary condition for judging the rationalization proposal.

In the EPC general contracting project, the design documents are mainly composed of the owner’s documents and the contractor’s documents. The owner’s documents mainly include the owner’s requirements and front-end design documents (ie the basic information and design result documents provided by the owner). The owner’s requirements primarily describe the objectives of the project (function, scope, quality and scope requirements of the completed project, requirements for the contractor to provide), design and other technical standards, and specific requirements for the contractor’s work. Contractor documents are specifically defined in the general contract. It is the responsibility of the contractor to prepare technical documents, such as calculations, computer programs, software, drawings, manuals, models, and other technical documents, as required by the owner’s request, and for approval documents, as-built documents, operations and maintenance to meet all regulatory requirements. Manuals, etc. There are similar provisions in FIDIC “Silver Book” and “Model Document of Construction Project General Contract (Trial)” (GF-2011-0216): “Contractor’s own design, procurement, construction, completion test, completion Defects in the post-test should be corrected, adjusted and improved at their own expense, and are not subject to change.” FIDIC “Silver Book” 5.2 Contractor’s document states: “If the contractor wishes to modify the design or document submitted for review, the employer shall immediately notify the employer. The contractor shall then submit the revised document to the employer in accordance with the procedures. [3] Nor

does the contractor's modification of the contractor's documentation be classified as an engineering change, from which it can be inferred that the contractor should the document is responsible for the modification of the contractor's documents by the general contractor or the proposed change is not an engineering change. As mentioned above, the rationalization proposal is an engineering change, so the content of the rationalization proposal is the owner's document.

3.2 The Main Situation of Rationalization Proposal

There are many types of engineering changes, and the changes made through rationalization recommendations are not the same. Bai Shuxun et al [4]. considered that there are three main types of rationalization proposals: improving the original design, using other materials, and changing the construction plan. Yan Ling et al [5] believe that the contractor's rationalization proposal mainly focuses on the following aspects: (1) other materials or equipment available in the construction; (2) there are improved design options during construction; (3) during construction There are improvement schemes that can be improved; (4) there are improved construction techniques in the construction; (5) there are unnecessary engineering projects that can be deleted during construction; (6) there are unnecessary engineering quantities that can be deleted during construction. . Rationalization proposals include design optimization, construction plan changes, material equipment replacement, etc., where design optimization is the main case of rationalization recommendations.

3.3 Scope of Rationalization Proposals for Contractors at Different Intervention Points in EPC Mode

In the standard EPC contract, the owner is not responsible for the design of the project. The contractor is responsible for all the design work. However, in the actual project, due to the complexity of the project and the different levels of the owner, the owner will often complete part of the design work in the early stage. Sometimes even at the preliminary design stage, in which case the contractor only needs to complete the detailed design. This paper has divided the design phase into the feasibility study design phase, the program design phase, the preliminary design phase, and the construction drawing design phase. In the actual project, the contractor's intervention time is more uncertain. It may be involved in the project halfway through the completion of a certain design phase. It may also be completed after the completion of the next phase after the completion of a certain phase. The contractor intervenes in the project without completing a certain stage.

4. Rationalize the Path to Improve Project Value

The basic feature of the contractor's rationalization proposal is to increase the value of the project. The contractor's rationalization proposal is based on the value project. The contractor pursues the improvement of the value of the project. Based on the value engineering perspective, there are five main paths for project value improvement: (1) The function is unchanged, and the cost is reduced (2) The cost is constant, the function is improved, (3) the function is improved, the cost is reduced (4) the function is reduced slightly, the cost is greatly reduced (5) the function is greatly improved, and the cost is increased slightly.

It is the basic obligation of the contractor to meet the basic quality and safety standards of the project for the project. The realization of the basic functions of the project is the most basic requirement for the success of the project. Therefore, the rationalization proposal should be improved on the premise of meeting the basic functions and technical standards of the project. The value of the project. Therefore, the basic path to rationalize the proposed project value: (1) the function is unchanged, the cost is reduced (2) the function is improved, the cost is unchanged (3) the function is improved, the cost is reduced (4) the function is greatly improved, and the cost is increased slightly.

In the foregoing, it has been clarified that the main situation of rationalization and rationalization proposals in EPC projects is design optimization and equipment material replacement. Therefore, this paper mainly discusses the path of rationalization and proposal to improve project value under the three conditions of design optimization and equipment material replacement.

5. Conclusions and Prospects

Although the EPC general contracting model started late in China, in the past two years, the state and local governments have vigorously promoted the general contracting model and introduced many laws and regulations. This proves the good prospects for the development of the general contracting model in China, and along with the Belt and Road Initiative. With the implementation of policies, more and more enterprises in China have gone abroad and contracted projects. EPC, as a very popular international contracting model, has brought more opportunities and challenges to China's general contracting enterprises. The main research results of this paper are the definition of project value, the scope of definition of rationalization proposals and the main situation of rationalization proposals.

This article is used for the two concepts of contractor documents and owner documents when judging the conditions of rationalization proposals, and considers that the change contents belong to the owner's documents is one of the conditions for rationalization proposals. The contents of the changes that belong to the contractor's documents are not considered to be changes, but Sometimes some of the contractor's documents are part of the contract documents, so there are still many questions here, and I hope that in the future, we can further clarify the relationship based on this article.

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