The Research on Project Management and Decision-Making System of Construction Enterprise

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Abstracts: According to the characteristics of building products and operation objectives setting by enterprise, construction enterprises present the following series of activities orderly: project contracting, planning, management, and achievements evaluation in the production process of construction projects. These constitute the project management and decision-making system, so as to achieve the business objectives.

Keywords: Project, Operation, Decision, Research

1 Introduction

Building products are fully formed by the cooperation of enterprises of surveying, design, construction, component manufacture and equipment installation, etc. That the construction enterprises can only develop production and operating activities in the form of project management, which is determined by building products of disposable, the single unit and differences of characteristics. Building products marketing activities mainly exist between the customers and building producers, and the main way contracting for products is tendering. Therefore, building products are often priced before produced. Sales and production have occurred simultaneously, namely a single product production, a single product sale. Due to marketing competition and establishment of project uncertainty, it is more risky for the bidding price. For different systems, categories and capacity of contracted companies, in the implantation of project period, because of management ability level and the differentiate structures, the project established by usage of cost is also different. To establish companies, it develops and keeps that must make decision in the right timing, including to provide the competitive price, prevent risk, control cost to gain the better economic benefits and achieve marketing targets.

During the whole of establishment of project, usage of control system theory aims at building marketing operation and decision-making management system by using coefficient algorithm topless decision approach and earnedvalue management technology, focusing on management of the whole expense, improvement project marketing production, reducing project establishment cost, and finally achieving maximization of benefit.

The construction enterprise’s survival and development should concentrate on development strategies, focus on corporate earnings and emphasize project control. According to the construction market rules and customers’ demand for the purpose, construction enterprises have improved the economic efficiency and realized the profit maximization by means of project operation, plan, management and control in accordance with the law.

\[ \text{Profit} = \text{construction cost} - \text{engineering cost} - \text{tax} \]

1.1 Form

After the mission of construction project contract confirmed, construction cost is the price of contract agreement, this means the output values of construction enterprise accomplished and profit level. When the project price is fixed, the enterprise’s actual cost expenditure will decide its profit. When the cost is fixed, the contract price will determine the competitiveness and viability of enterprises. Therefore, a scientific, reasonable and feasible method of profit calculation and distribution should be established between construction enterprises and contract project managers (project managers). This method should take the cost checking and ratifying single construction projects as key, account all profit index and cost
index according to the engineering price valuation methods, and clear the relationships between responsibilities, rights and interests.

In project execute stage, the construction enterprise should adopt modern project management methods, track the project process to carry out comparison, analysis and control, adjust unreasonable cost index and profit index timely and constantly enrich the construction enterprise quota by tracking the project process, which provides a decision-making basis for future development and implementation of the construction products.

After the project ends, it goes into post-evaluation stage. In this stage, the construction enterprise should establish a management information system for engineering quality assurance, which can provide both quality warranties and technical advisory services for the customers in the operation period. At the same time, the enterprise should seize every opportunity to take part in marketing, propaganda and public relations actively in order to establish a good commercial standing through the customers.

To sum up, the construction enterprise should implement project management mechanism according to the building products characteristics. Whether in project initialization, planning, implementation stage, or in project finish and operation stage, enterprise managers should practice enterprise marketing strategies, carries on the operating decisions and start business activities in each stage.

2 Project Contracting Decision

As project contracting enterprises, it is their premise and foundation to obtain project contracting tasks and sign engineering contracts in business activities. Enterprise decision-making and planning levels should widely collect project information, analyze project contracting cost, make further decisions and obtain project contracting task.

2.1 Extensive collection of project information
Enterprise management decision-makers should widely conduct a building market survey, collect market information and make construction supply and demand forecasting. They collect the information through some public newspapers, journals, public information networks and personal contact, then plot project supply and demand curves and make scientific predicts. Enterprises publicize their expertise, strength and performance to enhance their reputation by means of business communications, public materials and advertisements.

2.2 Project tracking and choice
Project tracking and choice is collected for analysising and judging continuously to the engineering project information, and is the process of project bidding until determined according to the specific conditions and enterprise project marketing strategy. Construction enterprises shall establish a special bidding agencies equipped with modern information, which guided by the modern marketing theory and methods. Bidding agency or enterprise decision-makers need the information obtained from the project, according to macro environment of the project area whether is suitable for entering, to make the choice conforming to enterprise management strategy, management ability and specialized skill to carry on projects track, or to preliminary decide to bid,. The choice track project or preliminary determination of project bidding process is an important decision process for construction enterprise management, it includes: (1) choose carefully in accordance with the principle of selection, (2) do well investigation and research, closely follow, (3) choose quantitative analysis method, namely the weighted coefficient method or the decision tree method, the project decision analysis.

2.3 Establish a project contracting cost management system
It is important to work out a method which takes reasonable distribution of interests of both sides into account and indicators of project cost management system between construction enterprises and construction contractors. Namely:
The high cost of approved projects will decrease profit of the corporate and affect its long-term development. On the other hand, the low cost of approved project will frustrate project contractor's enthusiasm and prevent realizing their legitimate rights and interests and project benefits. Therefore, the cost management system needs to be established based on the price theory, cost theory, control theory, using the support system of computer technology process and incorporating with enterprise quota and pricing information system. Only in this way, enterprise can make decisions quickly, obtain competitive bidding and gain the expected profits, and constantly improve their survival ability and competition ability.

3 Construction Project Decision-Making

In the process of project construction, as a legal representative for the contractor, project manager is the key to the success of the project and responsible for project management activities. Project manager will implement a plan on the organization of the project, a program on project progress, and put the whole project construction into control, according to the project specific circumstances.

3.1 The management of project organizational planning

Construction enterprise decision makers should determine the project manager before starting the work. Project managers, depending on the specific circumstances of construction projects and engineering project management standard of our country, should plan the project organizational forms, figure out work breakdown structure (WBS) and have a comprehensive project construction management. On the basis of the contracting price, planned duration and quality optimization, project manager should determine the target cost for contracting project and try to make each project members understand their own task. Project manager should carefully select subcontractors, technical consulting units and material and equipment suppliers and sign contracts with them separately whom is clear about the bilateral responsibility, the right, the duty and the economic interest relations.

3.2 The management of project implementation stage

From the perspective of the production process of the building products, project management is the key which goes throughout the whole construction stage and decides whether the final results of project construction can achieve the project objectives. It is the core task for project manager and the project management organization management to take control of cost, quality and progress. Therefore, during the project construction, engineering enterprise management should focus on cost control, progress
control and quality control.

3.2.1 Cost control of construction project
Cost is the monetary expression of labor (materialized labor and living labor). The project cost is the sum of production cost, management cost, service cost and management cost, which are consumed by construction enterprise to accomplish all the tasks in contract. Engineering project cost control should adopt a method of management by objectives, run a system of incentives and disincentives actively and take an effective comprehensive control. Production factors in project cost control should be based on planned objective cost for inquiring, purchasing and subcontracting, which are implemented by the principle of quantity and price control in advance and purchase after budget. Project manager department should intend to get rid of all sorts of loss and waste caused by unreasonable construction organization, planning and scheduling, strengthen the management of engineering contract to claim and use construction contract conditions and the relevant laws and regulations to claim correctly. Project managers should comparatively analyze various cost factors, divisional project cost and total engineering cost and use deviation value and deviation ratio index to reflect deviation degree intuitively. In this way, project managers have been able to control each cost item, total cost and profit of the project from beginning to the end..

3.2.2 Progress control of the construction project
Project schedule usually refers to the implementation of the project progress. In the progress of construction, resources such as time, labor and materials, etc. have been consumed in order to accomplish the project task. In modern project management, people have given the progress comprehensive meaning. Process control is not just the traditional meaning, but also regarded as a unity of project duration, cost, labor and resources, etc. In the process of progress control, various control methods should be used to ensure the whole project to start on schedule. In the final control period, project administrators should compare the actual progress with scheduled plan to determine the whole project completion degree. According to the project progress, production results and labor ratio, project manager should evaluate the project progress, analyze the exiting problems, put forward progress adjustment measures and have a network analysis again. Finally, project manager needs to appraise the adjust measures and new plans to analyze their effects and to evaluate if the new project duration can meet project objectives.

3.2.3 Quality control of the construction project
Project quality is an important index and it is eventually embodied in the project operation functions and effects. The factors which influencing project quality are also comprehensive, which involves the entire process and each essential factor of the project, and mainly displays in the project quality control aspect, its main point is: (1) The construction enterprise should be responsible for the construction quality; (2) The project quality objectives are vulnerable to damage; (3) Executors are the key element of the quality control and they need to have a full understanding of quality consciousness; (4) Quality control procedures and power are identified. The project quality control goes throughout the whole construction process. The contents of quality control include implementing quality standards, participating in joint trial of technical documents, checking the material quality, inspecting engineering quality and participating in project acceptance and handover. Only in this way, the project quality can be achieved.

3.3 The project quality warranty and operation planning
The project quality warranty is mainly referred to the repair and rework of the accepted buildings, which is usually conducted by construction enterprises according to the national or industry current standards, the relevant technical documents and requirements of contract within the prescribed time-limit. Project maintenance phase is the crucial period to check whether the quality of the construction project in dynamic, whether the circumstances meets the agreement requirements. The owner satisfaction largely depends on the project contracting enterprise guarantee service quality, which is related to enterprise reputation and credibility, at the same time, enterprises can also use this opportunity to make less
mistakes and losses of project construction management, and to eliminate the negative influence. Therefore, the enterprise should actively adopt corresponding measures, under the project manager, making warranty guarantee planning system, establishing the team owner taking the advice, and also improve the operation period of training project owners or maintenance personnel for maintenance contract signed, repair and maintenance. It is truly reflected contracting enterprise "customer first, quality first" principle of service. At the same time, in the whole project, project management during the performance of the contract, also be good at using right to claim in self-hand, to achieve business objectives and obtain good profits. Thus, it is to set up the good image of enterprises in social valuing contract and keeping reputation, which win the valuable intangible assets for enterprise.

4 Project Management Achievement Evaluation

In the process of the whole construction, the owner takes control of the project from start to bottom. Especially in the construction stage, it is a one-off production process with huge investment of human, material and financial resources and this process is not reversible absolutely. Therefore, the project management of enterprises not only concerns the construction investment effect, but also concerns survival and development of enterprises. After finishing the project, the contractors will appraise the operating activities of project organization in a project cycle. The evaluation will take the following steps: project organization self-appraisal, customer evaluation, information collection evaluation and target achievement evaluation. The content of project management performance evaluation can be divided into the following aspects:

4.1 The best pricing
Considering the best bidding price in the most competitive bidding, the best price can implement contract simultaneously and increase the project cost by the reasonable remedy that aim at coinciding the final account of budget and the project cost basically.

4.2 Actual cost control and target cost settled
Controlling actual costs to achieve the anticipated effect, the target cost is associated with contract price to calculate the current the project measurement and valuation, during the implantation period, the actual expenditure also access the subjective control to achieve the anticipated effects and goals.

4.3 Improve production efficiency
Using the advanced construction technology and project management methods, it aims at utilizing and optimizing any kinds of resources, improving construction effectively, reducing the project cost.

4.4 Information management
The project implementation involve contracted cost, subcontracted cost, marketing price information, industry and companies benefits, risk data measurement, decision-making data and other expense indexes to arrange and process. Due to decomposition of actual project expense, it obtains to consume per unit index and price per portion of project that is established and improved company's quota. The actual project with marketing relationship coordinates the different level of energy, resource, information exchange, and builds connection between economies and customers' evaluation networks. To evaluate the economic activity of the project integrity and generally, it gains the conclusion and then formation of report. The project report of assessment describe managers circulate notices to some related departments that aim at concluding experience briefly, accumulating information, classifying categories and restoring. Basically, it is virtual important to assess actual project and support the future project.
5 Conclusion

According to the characteristics of building products, the producer of building products use mechanism of project management to establish project management and decision-making management system. Corporate leaders should practice the strategic thinking of marketing resource planning at each stage of management activity, no matter construction project in initial start-up phase, plan stage, implementation phase, closeout phase or operation phase. They keep complete the project management mechanism, make contract decision scientifically and get safe competitive quote. Director should not only control project cost and improve the production efficiency, but also reduce the cost for the project and realize the profit maximization.

References