Research on the Cost Management of Real Estate Computer Informatization Based on the Concept of Value Engineering in the New Economic Era

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Abstract. The cost management of computer information can make the real estate enterprises form the core competitiveness under the environment of strict control of house price. The design stage and construction stage are the key stages in the whole process of cost control. This paper analyzes the information cost control method in the design stage from the quality control, quota design and value engineering concept, and seeks the optimal solution of the prior control. In the implementation stage, the dynamic control management based on PDCA cycle is emphasized, and the design change and invalid cost are strictly controlled.

Keywords: Real Estate Enterprise, Cost Management, Value Engineering, Computer Informatization

1. Introduction

Real estate enterprises are vulnerable to the passive influence of national policy environment and market changes. Under the policy background of "real estate without speculation", affected by the epidemic situation, precise strategic cost management will become the controllable core competitiveness of real estate enterprises in the industry. A good strategic cost management is a systematic control process throughout the whole life cycle of a project. From the investment and financing decision-making to the implementation stage, the design stage and the implementation stage are the key stages of cost management. This paper mainly analyzes the cost management in this critical stage.

2. Cost control in design stage
Although the design cost only accounts for less than 5% of the total cost, the impact on the total project cost is as high as 75%. To a great extent, design determines the cost, duration, quality and economic benefits of the project. The goal of optimal design is to meet the functional requirements at the lowest possible cost. The cost control in the design stage belongs to the pre control, which will have the effect of spending small money to do great things, so the cost control in the design stage is the key stage of the project cost control. This paper will analyze the cost control methods in the design stage from the following three aspects.

2.1. Strengthen design quality control

No matter the initial design or the results of the deepening design, each line involves the input of people, materials, materials and equipment to achieve, so it is particularly important to grasp the design quality before the commencement. In the actual construction, there are many problems such as "mistakes, omissions and collisions" caused by design errors. In order to reduce unnecessary engineering changes in the later construction process, deep and detailed design should be done.

The quality control of the design process has a far-reaching impact, but the monitoring management is very difficult, so it needs to be specified in the design contract terms. If the cost increases due to the change caused by the design, a certain proportion of the design cost shall be deducted as compensation. However, good design quality is not blindly regardless of the increase of cost. It is a measure to control the design specifications, design standards, quantities and budget indicators.

2.2. Carry out quota design

Quota design is to conduct preliminary design according to the investment estimation and design specification, and then guide the construction drawing design through the means of quantity control and investment decomposition, so as to ensure that all disciplines meet the function and the total investment does not exceed the expectation. Quota design is one of the more methods to control the budget in the design stage, which emphasizes the combination of economic rationality and technical feasibility. In the actual operation, there will be a phenomenon that the designer seriously reduces the budget in order to complete the quota of each specialty. For this phenomenon, standardized design can be adopted, and each specialty can be designed according to the building standards, technical regulations, design specifications and building modules. At the same time, in order to ensure the design quality and implement the responsibility system, the designer is obliged to be responsible for the technical and economic effects of the corresponding design. The design behavior of designers is constrained by the way of responsibility system to ensure the realization of quota design index.

2.3. Use value engineering to optimize engineering design

In technical economics, the theory of value engineering pursues the balanced realization of cost and function, which is consistent with the purpose of cost management, so this paper uses the theory of value engineering to analyze cost management. The basic formula of value engineering is \[ V = \frac{F}{C} \] (V is the value; F is the product function; C is the product cost). The core idea is to reduce the cost as much as possible on the premise of ensuring the necessary functions and product quality, eliminate the
unnecessary functions, make the product value tend to 1 as much as possible, and advocate the most reasonable economic cost scheme to enhance the core competitiveness of the product.

Introduce the concept of value engineering into the design stage, fully consider the real estate positioning of the project and the selection of building materials and equipment used, identify the process function and unnecessary function from the basic function, auxiliary function and beautification function, remove the cost of excess function and increase the necessary function not considered. Based on the comprehensive analysis of the best combination point of cost and function judgment, the cost control in the design stage can be realized.

3. Cost control in project implementation stage

The project implementation stage is the materialization stage, which is the process of creating engineering entity products according to the design drawings, with the characteristics of long cycle. The cost control in the implementation stage is the dynamic management of the whole process cost of the project with the target cost as the main line of management, reasonably making the target cost to ensure the economic benefit of the project, timely implementing the dynamic management, standardizing the change of visa, reducing the invalid cost and other measures to effectively control the cost and improve the market competitiveness.

3.1. Implement target cost

The target cost is to formulate process cost management documents such as design bidding, project management and marketing based on the market situation and risk prediction, project planning and customer value analysis. The target cost involves government fees, land fees, preliminary expenses, construction and installation engineering fees, property start-up expenses, sales expenses, financial expenses and management expenses. The project implementation stage is a process of implementing the established target cost. There are two important tasks in the implementation process, one is target cost decomposition, the other is contract planning.

(1) Target cost breakdown

Decompose the target cost to the responsible department and each responsible person, clarify the cost management responsibilities of each department, that is, evaluate the performance results of cost management of each department according to the feedback of economic indicators. To achieve responsibility to person and responsibility to department, problems in cost control evaluation of each link can be traced back. Only by decomposing the responsibility of the target cost can the target cost be truly implemented.

(2) Contract planning

Contract planning is a process that decomposes the target cost into various contracts vertically, standardizes the behavior of each responsible subject in the form of contracts, and implements the target cost. Decompose target cost into contract planning, form contract target cost, prepare bidding control price or proposal price, guide bidding, contract price signing, process control and final settlement.
3.2. Dynamic cost control

In order to ensure the implementation of the target cost during the project implementation, dynamic control is required. Dynamic cost control is a PDCA cyclic control process of establishing the target (P) - Implementation (d) - Inspection (c) - adjustment (a) (as shown in Figure 1).

![Figure 1. PDCA dynamic cost control.](image)

Dynamic cost control is to compare the original objectives, regularly track and check the implementation, timely reflect the composition of the actual cost of each project, conduct monthly review of the dynamic cost of the project, analyze and summarize the cost control of the project, assist and urge each department to do a good job in cost control during the implementation of the project. In the development process, the dynamic cost is compared with the target cost. When the change exceeds the set amount or proportion, an early warning or corresponding control measures are timely issued for adjustment to ensure that the target cost cannot be exceeded.

3.3. Strictly control visa change

In the actual construction, the design change is easy to lead to the change of work quantity, which leads to construction claims and contract disputes, so the design change needs to be strictly controlled. Design changes can be reduced from two aspects. First, it is strictly prohibited to expand the project scale through design changes. Unless the original design affects the function of the project, design change is generally not allowed; second, when necessary design change occurs, it is necessary to review in strict accordance with the procedures, and timely check the increased cost after the design change. If the increased cost is high, a more reasonable scheme can be reconsidered. In practice, the phenomenon of project cost out of control often occurs due to the imprecise field visa process. The data shows that the settlement price of the project caused by the problem of project visa is up to 10% - 20%, so the visa change should be strictly controlled in the construction stage to reduce unnecessary cost increase.

3.4. Strengthen management to avoid invalid cost

Whether the construction scheme is reasonable and advanced is directly related to the construction quality, progress and cost. In addition to organizing experts to review the construction organization design of the bidding document, the special construction scheme shall be reviewed, and the multi scheme technical and economic comparative analysis shall be conducted by using the value engineering theory and other methods to tap the potential of saving project investment, so as to achieve the purpose of saving investment and creating higher benefits.
In the process of project implementation, due to wrong decision-making or improper management, it has no effect on value promotion, product creation and marketing promotion. It should be optimized in time to avoid cost waste, asset loss and invalid cost.

4. Sales mode and cost control under epidemic situation

Recently, affected by the new crown epidemic, the global economy has declined. China's economy has also been impacted by the international and domestic situation, and the real estate industry has been affected to a certain extent. Although many cities have issued supporting policies for "implementing policies due to the city", from January to February 2020, the data of land acquisition by real estate enterprises shows a negative growth, the house prices in the first and second tier cities show a slightly stable trend, and the sales volume has declined nearly 40%. Consumers' enthusiasm for purchasing houses is obviously insufficient, and the inherent sales mode and method can no longer meet the change of personnel flow mode. Actively exploring online sales channels has become an important means of real estate marketing. This means adapts to the contemporary life style. The key points of cost control of online sales mode lie in platform construction or renting, advertising space promotion fee, salesperson promotion fee, etc. the cost is relatively low and easy to information management.

5. Conclusion

Project cost control is a systematic dynamic control process, which should fully consider the relationship between cost, duration and quality. This paper mainly analyzes the two most critical stages of cost control in the whole process of the project. In the class stage, the introduction of the concept of value engineering can well balance the effects of various aspects, and effectively avoid the problem of excessive emphasis on cost due to quota design. Project cost control is a comprehensive subject integrating economy, technology and management, with strong implementation stage

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