

## Application Research of Activity-Based Costing in thermal power enterprises

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*Abstract: With the continuous development of China's power market and the further promotion of the reform of the power system, China's power market implements the policy of 'separating the power plant from the power grid and bidding for the power grid', which breaks the monopoly situation of power plants and makes the competition of thermal power enterprises more and more fierce. Compared with other enterprises, thermal power enterprises generally need a lot of capital investment, and the investment return cycle is long. As the main material of thermal power enterprises, the rise of coal price has greatly affected the profitability of thermal power enterprises. As an advanced cost accounting method, the application of activity-based costing has been widely valued by thermal power enterprises. This paper introduces the concept, implementation steps of activity-based costing and the difference between it and traditional cost management methods, analyzes the feasibility of implementing activity-based costing in thermal power enterprises, points out its defects in the implementation and application, and puts forward corresponding policy suggestions, so that enterprise decision makers can understand the consumption of product resources through activity-based costing management, thus effectively reducing the consumption of product resources Cost.*

*Keywords: Activity-Based Costing, Thermal power enterprises, Cost control, Cost object.*

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### 1. INTRODUCTION

Nowadays, China is in the period of economic structure transformation, the power system reform is deepening, under the condition that the on grid electricity price has been unified, the thermal power enterprises are facing unprecedented challenges, the rough and backward traditional cost method can not meet the increasing demand of thermal power enterprises. For the decision-makers of thermal power enterprises, it is necessary to establish advanced cost management concept, and make efforts in resource consumption and effective control to promote the continuous progress of thermal power enterprises, which is the advantage of activity-based costing. Therefore, in order to survive in the competition, thermal power enterprises must actively implement the activity-based costing, seek advanced cost management concepts, conscientiously implement the concept of cost reduction in each process of thermal power generation, save costs, and realize the sustainable development of enterprises.

## **2. RELATED THEORIES OF ACTIVITY-BASED COSTING**

### **2.1 An overview of activity-based costing**

Compared with the traditional activity-based costing, activity-based costing is a costing method based on activity-based costing. Activity based costing includes resource, activity and cost driver. (1) resources. It refers to all kinds of consumption of enterprises, which is the source of cost. As a necessary component element of resources, activity-based cost and expense are not only the main source of activity application and use, but also the component items of all costs and expenses when enterprises provide services and produce products. (2) operation. It refers to the activities of consuming resources for a certain purpose in an enterprise. It is the most basic concept of activity-based costing. It runs through the cost of resources and products, plays a bridge role between the two, so that enterprises can better complete all activities. (3) cost drivers. It refers to various factors that drive or generate costs and expenses. It can be a matter, an activity, or an assignment. The cost driver is the cost driver. The cost must be driven and guided by certain factors.

### **2.2 Implementation steps of activity-based costing**

The implementation of activity-based costing generally includes the following seven steps: (1) define the objectives and scope, and establish the implementation team. Before the implementation of activity-based costing, we should first define the objectives and scope of implementation. The scope can be the relevant department or organization implementing the activity-based cost. In order to ensure the smooth and effective implementation of activity-based cost, a cost implementation team should be set up. (2) be familiar with the operation process of the enterprise, analyze and sort out relevant information. When using activity-based costing, we should be fully familiar with the details of the business, clear the direction of the cost flow, analyze the causes of the cost, and sort out the relevant information. (3) establish activity-based costing model. To design the activity-based costing model, we should first fully understand the operation process of the enterprise, and clarify the activity, enterprise resources and cost objects. The model should be as detailed as possible, including the relationship of various organizational levels, the choice of cost drivers, etc. (4) select or develop the required tool system. There are some calculations in the implementation of activity-based costing, so it is necessary to prepare some specific tools for support. In the implementation of activity-based costing, a suitable tool system can make all kinds of cost accounting more convenient. (5) operation of activity-based cost. Collect the relevant data of the enterprise, transfer the data to the established model, and calculate the activity-based cost. (6) analyze the calculation results and find out the cause of the problem. After completing the operation steps of activity-based cost, we should analyze and study the calculation results of activity-based cost, including the reasons for cost changes, and find out the reasons that are not in line with the actual high or low. (7) take improvement actions. According to the cost accounting results, find out the existing problems of the enterprise, and carry out targeted rectification.

### **2.3 Differences between activity-based costing and traditional costing**

(1) inconsistent cost accounting objectives. For the traditional cost method, cost belongs to a final cost, which is a total cost. The activity-based costing belongs to the cost accounting of each activity link, and can calculate the final cost. The implementation of activity-based costing can improve the cost

management of enterprises, strengthen the effectiveness of enterprise production, improve the efficiency of enterprises, and ensure the better development of enterprises.(2) different cost objects.For the traditional cost, it accounts for the cost of products. The cost object is the final cost of products that can be used or sold by enterprises. Activity based costing pays more attention to the process of product formation and the causes and consequences of cost formation. Its cost object is every job. (3) different cost accounting processes.For the traditional cost, although it divides the direct and indirect costs, the difference between them is small. The traditional cost is directly included in the cost, while the activity-based cost is simply included in the cost after the division, without a more detailed division. (4) different distribution standards of expenses.For the traditional cost accounting, it mainly aims at the indirect cost and adopts the single standard principle of cost allocation, while the activity-based costing mainly uses the cost driver to allocate the indirect cost, and the standard of allocation is determined by the different activity forms. Therefore, the difference between them is the different allocation of the indirect cost.

### **3. FEASIBILITY STUDY ON THE IMPLEMENTATION OF ACTIVITY-BASED COSTING IN THERMAL POWER ENTERPRISES**

#### **3.1 Composition of cost and cost accounting in thermal power enterprises**

Cost composition of thermal power enterprises

In coal-fired thermal power enterprises, fuel cost accounts for the largest proportion of power generation cost, so the main work of accounting in thermal power enterprises is the accounting of fuel purchase cost and power generation fuel cost. Accurate accounting of fuel purchase cost and power generation fuel cost is not only a true reflection of the production and operation status of the enterprise, but also a basis for paying enterprise income tax in accordance with the law. Therefore, it is very important for thermal power enterprises to accurately calculate the purchase cost of fuel and the fuel cost of power generation.

Composition of cost accounting in thermal power enterprises

The cost accounting of thermal power enterprises mainly consists of two parts.(1) production cost accounting. The audited original vouchers collect direct production costs such as direct raw material costs and labor costs, and perform classified accounting and detailed classified accounting for the total production costs. Then, based on the power generation, the manufacturing expenses in the related expenses are allocated to the respective cost accounting objects. (2) cost calculation. The total cost of production is obtained by summing up the manufacturing cost and production cost, and the total cost is compared with the selling price of the product to calculate the profit and loss degree of the product.

#### **3.2 Feasibility analysis of activity-based cost management in thermal power enterprises**

At present, the domestic thermal power enterprises basically have the following conditions:(1) rapid development of informatization conditions.Nowadays, in order to adapt to the development of enterprises and improve operating efficiency, all thermal power enterprises pay more and more attention to the construction of information technology. According to the enterprise's own situation, actively building effective information conditions has become an important guarantee for thermal power enterprises to improve their own competitiveness. Moreover, enterprise resource planning has

been widely used and implemented in some thermal power enterprises.(2) pay attention to internal cost management.It is obvious that nowadays all thermal power enterprises attach great importance to cost management. They start from management, deeply explore the internal potential of enterprises, and strive to reduce production and operation costs, which provides necessary conditions for the implementation of activity-based costing.(3) the theory and practice of activity-based costing are becoming more and more mature.In our country, more and more scholars and experts devote themselves to the study of activity-based costing. All in all, activity-based costing is becoming more and more mature both in theory and practice. (4) development of relevant accounting software. When an enterprise adopts activity-based costing, it is undoubted that it should first have a new information system and management software matching it. Nowadays, there are many application software systems of activity-based cost management in China, and these software systems are constantly updated, so that its relevant functions are more in line with the needs of activity-based cost management, and relevant software tools are more in line with the actual application.

At present, the theory of activity-based costing is becoming more and more perfect, and the information condition of implementing activity-based costing is mature. Although on the surface, activity-based costing is applicable to many kinds of enterprises, while the products of thermal power enterprises are only one kind of electricity. From the result of cost accounting, it seems that thermal power enterprises are not suitable to adopt activity-based costing. However, through cost control and management analysis, every production step in the power generation process consumes resources, so the power generation process can be designed as activity-based cost. At the same time, the responsibility subject can be confirmed according to the activity to realize the activity performance evaluation. Therefore, activity-based costing can be applied to thermal power enterprises.

#### **4. PROBLEMS IN THE IMPLEMENTATION OF ACTIVITY-BASED COSTING IN THERMAL POWER ENTERPRISES**

##### **4.1 Lack of effective theoretical guidance and perfect system guarantee**

Many researches on activity-based costing are lack of practicability, and the empty theoretical sermons are hard to be convincing and can not stand the test. In the implementation of activity-based costing, enterprises lack of effective theoretical guidance. If they want to implement activity-based costing, they must master the theory, otherwise they can not talk about practical application. Enterprises attach great importance to cost management, but there are still many problems in financial management, such as the imperfection of internal financial system, the lack of standardization of accounting work, the aging of financial personnel, and the adherence to the old traditional cost method. Because of the imperfect system and loose management, many problems arise, such as the internal audit is not standardized enough, often only pay attention to the surface process, affect the normal accounting work, and have a negative impact on thermal power enterprises.

##### **4.2 High capital investment and high risk in the implementation process**

Although activity-based costing has obvious advantages in both cost accounting and strategic deployment of the company, the implementation cost of activity-based costing is too high and the risk is large. Huaneng Huaiyin company has invested a lot of money in improving the original cost system, training financial personnel and recruiting new accountants who understand ABC, so that the cost is

too high. In addition, from the perspective of long-term development, there is no objective basis for measurement of future earnings, and there is a great deal of uncertainty, so there is a resistance to the use of activity-based costing.

#### **4.3 The understanding of employees is not in place, and the quality of accounting personnel is not high**

In the past, the traditional operation method has been used in thermal power plants. The employees do not know the activity-based costing very well. The financial staff have the rejection to the new cost accounting method. They have different opinions on the work attitude and the specific work. For the older financial managers, they are conformed to the rules and lack of awareness of the new management concept. They think that the process of implementing ABC is too cumbersome, wasteful of energy, large capital investment, high implementation cost, and the results of accounting will not have too many advantages. These wrong understandings deeply affect the introduction of ABC in thermal power enterprises.

### **5. THE SAFEGUARD MEASURES FOR THE IMPLEMENTATION OF ACTIVITY-BASED COSTING IN THERMAL POWER ENTERPRISES**

#### **5.1 Strengthen the construction of basic strength and improve the guarantee of enterprise system**

One of the main purposes of implementing activity-based costing is to improve information distortion. However, it should be recognized that financial accounting is not the only cause of information distortion, and the internal control system of the company will also have a great impact on it. Therefore, thermal power enterprises should improve the management system, strengthen internal supervision, and lay a solid foundation for the implementation of ABC. Suofengying power plant has made great efforts to establish rules and regulations, standardize system and implement system, strengthened system management, consolidated the basis of improving quality and efficiency, greatly improved the efficiency of power plant, and provided experience for peers.

#### **5.2 Improve cost control system and cost management level**

For enterprises, if activity-based costing is applied, it will inevitably cost some human and financial resources. The implementation of this accounting method requires the allocation of special personnel or the training of existing personnel, and the corresponding adjustment of the enterprise organizational structure, which will increase the operating cost of enterprises. We must adhere to the principle of cost-effectiveness, that is to say, the benefit improvement brought by application must exceed the cost. Generally speaking, the more detailed the indirect cost is, the higher the comprehensive cost will be. If we can't save enough cost, then the application of activity-based costing won't pay off. It is an effective way to improve the cost management level to standardize the system of capital control and operation and constantly improve the efficiency of capital use.

#### **5.3 Improve the acceptance of employees and strengthen the training of accounting personnel**

When implementing activity-based costing, financial personnel are less familiar with business processes than business personnel, so enterprises should pay attention to this aspect of training, and let financial personnel understand the specific implementation process of activity-based costing. Financial personnel are the most direct personnel who use Activity-Based Costing. Only by

improving their acceptance can the implementation of activity-based costing go smoothly. Enterprises should be aware of the importance of strengthening the cultivation of compound talents, and carry out training in financial theory and computer related knowledge. In training, we should pay attention to the assessment of the effect, mobilize their enthusiasm, and make employees feel the importance of training and the changes brought by training.

## **6. CONCLUSION**

Under the circumstances of both environment and economy in China, thermal power enterprises urgently need to change the extensive management mode in the past. We need to know that in the rapid development of science and technology today, it is difficult to keep up with the pace of the times with the single use of traditional activity-based costing, and a little carelessness will be surpassed by the same industry. Although activity-based costing has its advantages, it should not be rushed and followed up blindly. It should not only have a solid theoretical basis but also be combined with its own reality. In order to make the activity-based cost control method can be well used in thermal power enterprises, it is necessary for thermal power enterprises to continuously develop their own scale, and improve the corresponding cost information quality, introduce and establish a highly information-based computer software system to ensure the superiority of activity-based cost control over traditional methods. Combined with their own situation, thermal power enterprises can make better development as long as they do a good job in internal cost management, study and learn advanced cost control experience, actively introduce advanced technology, optimize equipment, and establish a reasonable and optimized cost control system.

## **REFERENCES**

- [1] Liu Shuzhi, Fu Jingchao. Application of Activity-Based Costing in thermal power enterprises [J]. China management informatization, 2019,22 (05): 36-38.
- [2] Xie Dongming, Guo Hongbo, Han Zhen. Application of Activity-Based Costing in enterprise environmental cost accounting and distribution -- taking a thermal power enterprise as an example [J]. Economic research reference, 2017 (47): 59-61.
- [3] Yu Xinke. Application of Activity-Based Costing in coal enterprises [J]. China Economic and Trade Guide (middle), 2018 (23): 80-81.
- [4] Pang Lei. Analysis on the application and implementation of Activity-Based Costing in enterprises [J]. China chief accountant, 2016 (01): 98-99.
- [5] Qu Zhigang. On the application of ABC accounting and management in enterprises [J]. Contemporary accounting, 2015 (02): 63-64.
- [6] Shen Weiguo. Analysis of the application of Activity-Based Costing in manufacturing enterprises [J]. Accountant, 2014 (23): 42-43.
- [7] Wen-Hsien Tsai,Chih-Hao Yang,Jui-Chu Chang,Hsiu-Li Lee. An Activity-Based Costing decision model for life cycle assessment in green building projects[J]. ,2014,238(2).