

The Inspiration of Life Cycle Management of Fixed Assets in Foreign Power Grid Companies

Wang Yuanyuan

School of Economics and Management, North China Electric Power University, Hekou Road,
Huilongguan Town, Beijing

1123362210@qq.com

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Abstract: In order to solve the existing problems and difficulties in fixed assets' cost management of Chinese power grid enterprises, based on the current management situation of Chinese power grid enterprises, and drawing on the experience of foreign power companies in fixed assets' cost management and control, this paper puts forward some suggestions for implementing fixed assets' life cycle management method in Chinese power grid enterprises in order to promote the development of fixed assets' cost management, also to strengthen the cost control of fixed assets, improve management performance and economic benefits of Chinese power grid enterprises.

1. Introduction

The utilization efficiency and total cost of fixed assets are the decisive factors that affect the operating cost and profitability of power grid enterprises. For a long time, Chinese power grid enterprises have the contradiction of high proportion of fixed assets and low operating efficiency. Therefore, the implementation of fixed assets' cost management reform is imperative. In order to deal with increasingly complex business environment, global power regulation has experienced from the self control process to the process of independent oversight ultimately to comprehensive supervision by the government. In this process, many foreign power transmission and distribution companies have taken the lead in introducing advanced concepts and methods of life cycle management of fixed assets to extend the service life of fixed assets as much as possible and improve the benefits of fixed assets. These advanced concepts and practices of fixed assets' cost management have certain reference significance for improving fixed assets' cost management of Chinese power grid enterprises.

2. Problems in Fixed Assets' Cost Management in Chinese Power Grid Enterprises

2.1 Scope of Cost Control Needs to be Expanded

Grid enterprises are typical asset-intensive enterprises. The fixed assets' cost and depreciation cost of grid enterprises account for a large proportion of the total cost, and the space of controllable cost is small. With the accelerated pace of power grid construction in recent years, the power grid construction investment has been increasing continuously, the fixed asset's scale of power grid enterprises has been increasing rapidly, and the depreciation expense has shown a rapid growth trend. In recent years, Chinese power grid enterprises have paid great attention to the management of controllable costs. For example, the state grid corporation of China has formulated three controllable cost indicators, including material cost, repair cost and other controllable costs, which strictly controls the transmission and distribution cost and achieves cost savings. Since the three controllable expenses account for less than 20% of the main business costs, in order to fully control the cost growth, it is urgent to break the traditional category of controllable costs and implement cost control in a wider range such as more concrete cost management of fixed assets.

2.2 Cost control Cycle Needs to be Expanded

Power grid enterprises usually manage the stages' costs according to the fiscal year. The practice of pure cost management according to the fiscal year breaks the correlation of fixed asset's cost projects in time series, which is not conducive to the initiative control of infrastructure investment by grassroots power grid enterprises and easy to cause enterprises to pay too much attention to short-term performance, which is not conducive to the long-term development. In order to serve the sustainable development of grid enterprises, it is necessary to break the traditional practice of fixed asset's cost management according to the accounting year and extend the cost control cycle.

3. Experience of life Cycle Management of Fixed Assets in Foreign Power Companies

3.1 Experience of British NG Company

NG Company divides the life cycle of fixed assets into four stages: performance evaluation, strategy formulation, network planning and power grid construction. The company emphasizes that these four stages are the continuous and perfect integration process [1]. Fixed assets' cost management should include the whole process into unified management. The relationship between assets and related human resource costs, procurement costs and operation costs and maintenance costs should be taken into full consideration. In addition, information system should be used to collect technical data and financial basic data. In this way, quantitative evaluation and scientific decision-making can be made to promote the optimization and improvement of fixed asset's cost management process.

3.2 Experience of Hydro One in Canada

Since 1999, the company has introduced the concept of reliability into fixed assets. Through the management process serving the fixed asset' cost managers and service providers, the company has selectively adopted outsourcing to expand the use of external personnel. At the same time, it has made clear the boundaries of responsibilities with the idea of reliability as the center to unify fixed assets. The work procedure of the project ensures the consistency of cost management and service, and improves the quality of cost management. In the concrete implementation, Hydro One Company not only reforms the organizational structure, but also optimizes the information system. By constantly emphasizing that the overall interests of the company outweigh the local interests, it ensures that the company funds can cover all the fixed assets' planned maintenance projects, and ensures that professionals can concentrate on collecting and analyzing the fixed assets' status data to guarantee the standardization of the work. In terms of the assessment of the health status of fixed assets, Hydro One has established a professional assessment method to quantify the status of fixed assets with reasonable scientific indicators and decide whether to extend the service life according to the health status of fixed assets. The company uses the fixed asset's health index to determine whether the fixed assets have aged or reached maintenance status. By analyzing the percentage of unhealthy fixed assets in total fixed assets, the company can assess the aging trend of fixed assets, determine the fixed asset's maintenance and inspection focus to strengthen the management of fixed asset's maintenance costs and scrap costs.

3.3 Experience of Powerlink in Australia

Powerlink's fixed asset's management process includes strategic positioning, strategic management, resource planning and performance review. In terms of strategic positioning, the company mainly considers the requirements of stakeholders, corporate strategy and service level. In terms of strategic management, on the one hand, new assets are planned and invested to meet the long-term needs of users. On the other hand, implement reasonable maintenance strategy to guarantee asset's security, reliability and economic operation. In terms of resource planning, it plans not only the internal human resources of the company, but also the human resources of contractors who undertake construction, debugging and maintenance tasks externally to control the human resource costs related to fixed assets. In terms of performance review, data collection and

analysis of new fixed assets and existing fixed assets are realized through the usage of comprehensive asset management system and data processing system, so as to lay a foundation for performance management in the investment stage and controllable operation cost in the execution stage.

3.4 Summary of Foreign Power Companies' Experiences

According to the application of fixed assets' life cycle management in foreign power companies, the life cycle management of assets not only enables the cost management to be optimized, but also has the following advantages in meeting the requirements of regulators. The first one is to insist on taking reliability and power quality as the center in the cost management process, establish advanced power grid's planning concept, emphasize the implementation of closed-loop management concept, and scientifically formulate long-term comprehensive project plan, which is helpful to achieve the goal of the lowest total cost in the life cycle of fixed assets. Secondly, we should take all aspects of cost management into consideration, optimize the management process of fixed assets, timely use the risk assessment method to avoid potential risks, and pay attention to carrying out active status detection and overhaul, which is helpful to eliminate hidden risks in fixed assets' management and greatly improve the working efficiency of fixed assets. Thirdly, it emphasizes the integration of information system, makes full use of advanced information tools to integrate the main business process into the whole life cycle management of assets and achieve information sharing, which is helpful to improve the scientific and accurate decision-making of fixed assets.

4. The Enlightenment to the Fixed Assets' Cost Management in Chinese Power Grid Enterprises

Under the background of the strategic development goal of "strong power grid, excellent assets, excellent service and excellent performance" proposed by state grid corporation of China, it has become an important work to strengthen the research on fixed asset's cost management and further promote the life cycle management of fixed assets [2]. At present, Chinese power supply companies begin to abandon the traditional sectional management mode of fixed assets based on department functions, which is difficult to adapt to the new situation of operation and management. They begin to rely on SAP information system to carry out the whole process of cost management from planning, investment, design, procurement, construction, operation, maintenance to scrap. To a certain extent, it has improved the efficiency and effectiveness of assets' management. However, due to the unique features of various categories, wide distribution range, high technical content, large quantity and rapid update of the fixed assets, the successful construction of the fixed assets' life cycle management system is not accomplished overnight. At present, Chinese power grid enterprises still have some problems in fixed asset's cost management. Therefore, we can learn from the advanced concepts and practices of foreign power companies and start from the following aspects to reduce the total life cycle's cost of fixed assets and improve the economic benefits of power grid enterprises.

4.1 Improve Mechanism Construction

The life cycle management of fixed assets in power grid enterprises is a complex systematic project, which cannot be separated from the related full range of training and the corresponding organizational guarantee. First of all, multilevel all-staff training helps employees to comprehensively understand the key links and important processes of the life cycle management of fixed assets, change the traditional one-sided management concept, and promote innovation in management methods, working mechanisms and assessment methods. A team of fixed asset's cost management personnel with strong sense of responsibility, high professional level and advanced management concept is an important force to ensure the authenticity and reliability of fixed asset's data [3]. Secondly, power grid enterprises should set up the fixed assets' life cycle management committee with the leaders in charge as the group leader, and the directors of the production

technology department, development and construction department, safety and quality supervision department, financial assets department, human resources department and other relevant departments as the main members. This committee is supposed to study the development strategy of the whole life cycle management of fixed assets, coordinate each department's standard difference, guide the planning, designing, procurement, construction, management, and other links, make the whole life cycle's management evaluation index, ensure basic data unified management system and other departments, and ensure the smooth development in the whole life cycle management of fixed assets.

4.2 Deepening Process Management

The current ERP information system adopted by grid enterprises is a reflection of the integration of modern management ideas. It introduces the concept of process management and promotes the online control of fixed assets' cost. However, it is necessary to establish a localized process to meet the actual management needs of enterprises to achieve the goal of optimizing the cost management of fixed assets and efficient operation of fixed assets. In addition to detailed planning, designing and material procurement process and strict control of project investment process, special attention should be paid to the frequent addition, scrapping, improvement and repairing of fixed assets in grid enterprises due to their frequent use of fixed assets, heavy operation and maintenance tasks, and high safety requirements. Therefore, it is particularly necessary to promote the real-time flow of the process from personnel training, performance assessment, responsibility supervision and other aspects, and to constantly fix the loopholes and gaps in the process management. Only in this way can each stage's cost of the life cycle can be brought into the process of unified management.

4.3 Improve Assessment Indicators

In order to guarantee the realization of the overall objectives and goals of fixed assets' life cycle management, power grid enterprises carefully sort out the data requirements of cost management in financial, production and maintenance departments, establish a scientific and multidimensional index analysis system of asset's life cycle management, and conduct irregular and periodic analysis on the safety level, efficiency level and life cycle's cost of fixed assets. In terms of strengthening cross-departmental and cross-business collaboration and process handover, it is also necessary to pay attention to long-term accumulation and preservation of system data, pay attention to real-time changes of data and technical standards at all stages, seek the optimal index parameters and evaluation model, and establish a complete asset's life cycle management evaluation system.

4.4 Optimize the Information System

SAP system is an effective technical means to realize the life cycle management of assets. Power grid enterprises adopt SAP information system management in all stages of life cycle from planning, designing, procurement, construction, operation, maintenance to scrap[4]. Through integrated process management, they can coordinate the relationship between various businesses, break through the barriers of functional block management, realize the information sharing of planning, engineering, materials, finance and production modules, quantify and refine the relevant indicators, monitor the cost of each link of the life cycle, and gradually improve the closed-loop management mechanism[5]. Therefore, it is necessary to continuously optimize the system functions, add business processes according to the actual management needs, make up for the loopholes in the current asset's life cycle management, and constantly expand the relevance of SAP system and other information systems. Establishing a powerful asset's life cycle management optimal database is the information guarantee to realize the fixed asset's life cycle management, and it is helpful to realize and optimize the cost control of fixed asset's life cycle in power grid enterprises.

5. Conclusion

Deepening the life cycle cost management of fixed assets conforms to the urgent need for grid enterprises to realize comprehensive, coordinated and sustainable development goals under the new situation. Chinese power grid enterprises must recognize their own characteristics and actively study the advanced practices of fixed assets' cost management in foreign power companies, constantly utilize mature information systems to strengthen the process of fixed assets' cost management, strengthen the information exchange among strategic, management and executive levels, timely discover the problems existing in the purchasing, construction, using, depreciation and disposal of fixed assets, revise the resource plan, optimize the management strategy and process, and improve the management level. In the end, the whole-process control and overall cost optimization of fixed assets' management can be realized, the functions of life cycle management can be guaranteed, and the economic benefits of grid enterprises can be improved.

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