

Power Grid Project Budget Management Performance Evaluation System

Xi Chen *, Youhua Li

State Grid Energy Research Institute Co., Ltd. Beijing, China

*chenxi0160@163.com

Abstract. Performance evaluation of grid project budget management can help enterprises analyze and evaluate budget performance, find out problems in budget management, and propose improvement suggestions to help solve problems in budget management. By establishing and improving the comprehensive budget management system of the enterprise, the efficiency of the company's budget management can be effectively improved.

Keywords: power grid, budget management, performance evaluation.

1. Introduction

Comprehensive budget management is an effective mechanism of modern enterprise financial management, which can adapt to the nature change of financial activities. Power products provided by power grid enterprises are very important for daily production and life as the basic industry of national economy. Establishment and improvement of company performance evaluation system of budget management are beneficial for the company to analyze and evaluate through budget performance. Problems of budget management are discovered, and improvement suggestions are proposed according to the financial and non-financial indicators of the company, thereby assisting to solve problems in budget management, perfecting comprehensive budget management system of enterprises, and improving management efficiency of company budget. The application of the budget performance evaluation index system can also provide a basis for the company to assess the performance of employees and the leadership, thereby providing reference for the company to correctly guide enterprise business behavior, improve the management level, promote the company to strengthen the basic management and improve the business performance, and implement indirect management by the superior power grid company to power supply company.

2. Literature Review

Feng Sujuan (2017) argued the follows in the aspect of budget performance analysis system: that enterprise financial comprehensive budget management system and enterprise performance management system are two important systems to enterprise management operations, and the two systems are linked tightly with interdependence and mutual development. How to combine them organically. Establishment of suitable performance evaluation index system can promote enterprise core competitiveness and improve company economic benefit under the guidance of enterprise comprehensive budget. Yuan Yijian (2018) proposed the necessity of establishing the budget performance management system of administrative institutions from the perspective of internal control and various problems existing in the current budget management performance model of administrative institutions, and specific strengthening strategies are proposed aiming at problems. Cui Yu (2018) analyzed the relationship between corporate comprehensive budget and performance appraisal as well as the strategies for their effective integration. Enterprises are faced with more severe market situation and more fierce competition under the new situation, and enterprises can be invincible in order to improve the economic benefits thereof.

Zhao Xu (2017) puts forward strict requirements for the construction of budget performance management model in terms of budget performance analysis model. It is required that internal control should be incorporated into the construction of budget performance management model from the perspective of internal control so that the two aspects can become a coordinated and unified organic

whole, thereby ensuring normal management of enterprises, achieving efficient use and allocation of enterprise resources and funds, and promoting the long-term development of enterprises. Yu Jinxia (2018) made a careful analysis on reform of budget performance management and financial management mode of administrative institutions, and proposed improvement measures. Chen Xuejun (2018) described the framework of budget performance management reform, and adopted preparation, solutions and plan implementation as the breakthrough points for analyzing administrative institutions financial management mode. Meanwhile, the concepts of innovating financial work of administrative institutions are proposed from the aspects of improving the performance management level and playing the role of financial management, thereby giving full play to the role of performance budget reform, further optimizing the institution of financial management mode, and enhancing its creativity. Duan Lei (2018) analyzed the problems and causes of the budget management model and put forward some suggestions to promote the rapid development of China performance-based budget management model, thereby contributing to the development of China performance-based budget management model.

Chen Ling (2014) analyzed the economic benefits brought by smart grid in the grid-side link and its action mechanism based on the planning and construction of smart grid in China in terms of benefit measurement. The calculation model of economic benefits of power grid links is mainly studied. Pei Chunming (2014) established an economic benefit evaluation model of power grid environmental protection science popularization publicity based on the influence of power grid environmental protection science popularization publicity on power production, power transmission and power consumption, and analyzed the formation mechanism of economic benefits in each link of power grid environmental protection science popularization publicity. Example analysis of the economic benefit of the power grid environmental protection popular science propaganda shows that the power grid environmental protection popular science propaganda can bring better economic benefit according to the economic benefit calculation model. Du Juan (2016) studied the measurement method of energy saving and pollutant emission reduction performance of eliminating backward production capacity, established the measurement method of energy saving efficiency based on actual energy consumption or energy consumption quota standard, and the measurement method of pollutant emission reduction efficiency based on emission and emission coefficient. Some suggestions are put forward to improve the accuracy of measurement of environmental performance of obsolete production capacity based on the research of measurement methods. Zong Huijuan (2017) implemented theoretical analysis on the mechanism of affecting social benefits according to the study of measurement method. Evaluation system of social benefit is constructed based on the pressure - state - response model. The influence of energy Internet construction on social benefits through clean alternative, network optimization and power alternative is evaluated by using the measurement of the data of China smart power grid construction.

3. Power Grid Project Budget Performance Analysis and Evaluation Content

The evaluation of the budget performance of power grid projects mainly refers to evaluation of efficiency and effect of power grid project investment, construction, operation and maintenance, horizontal comparison and historical comparison are implemented through the evaluation of the budget performance of power grid projects so as to find improvement points and improve the value of power grid projects.

Power grid project budget performance analysis involves both technical issues and management issues, which are inseparable. At present, the company evaluates budget implementation work completion condition mainly aiming at power grid project budget performance evaluation system, the financial index is regarded as the main content of budget management performance level. The following deficiencies are always available during evaluation in grid budget performance: firstly, the evaluation method is single, comparative analysis of the financial index is mostly adopted, the appraisal of non-financial indicators is ignored; secondly, the evaluation is mostly limited to the feasibility study of a single power grid construction project; thirdly, evaluation indexes capable of

reflecting single power grid construction project performance are usually adopted, such as financial internal rate of return (IRR) and financial net present value (NPV), etc. Grid operation indexes such as power supply reliability and voltage qualification rate are deficient, which cannot comprehensively and truly reflect the development and benefits of the power grid.

Power grid enterprise is facing the social economic and technological environment with rapid change in knowledge economy era, the entire enterprise evaluation theory and method system are also facing serious challenges in complex environment. Current evaluation should more focus on subject diversification and socialization. The combination of result evaluation and process trend evaluation should be further emphasized. The evaluation of enterprise sustainable development ability also should be focused.

4. Construction of Power Grid Project Budget Management Performance Evaluation System

(A) Index selection principle

The connotation of enterprise production and operation performance is constantly enriched and improved with the development of social economy. Current situation shows that business objectives of enterprises have changed from the simple pursuit of profit indicators to focus on enterprise sustainable development and improvement of enterprise value. Actual situation and effect of company overall budget management is comprehensively considered. Modern enterprise performance evaluation method is combined. It is proposed in the paper that the company power grid project budget management performance evaluation index system should be a diversified and multi-level composite index system. The selection of indicators follows the following principles: goal-oriented principle, importance principle, operability principle, relevance principle, comparability principle, adaptability principle, and the principle of combining results with rewards and punishments.

(B) Construction of index system

When the specific index system is established, the performance of power grid project budget should be considered in the process performance and the effect performance through the comprehensive analysis on multi-level, overall, long-term and overall characteristics of power grid projects, wherein budget analysis of key nodes based on the process is mainly focused in process performance. Effect performance evaluation refers to comprehensive evaluation on the economic and social benefits generated by the power grid project.

Leading direction can be set for power grid planning and project budget performance goals by clearly defining the development direction of power grid enterprises and establishing a comprehensive, unified and complete corporate development strategy in the operation and development process of power grid enterprises. The grid project budget is tightly connected with the company development strategy, thereby project budget allocations can fully reflect the company's strategic needs, thereby it maintains highly consistent with the company's strategic objectives, the enthusiasm of company capital allocation can be fully aroused, the allocation of resources structure can be optimized, it is ensured that the strategic goal can be achieved, and the power grid project capital expenditure performance can be improved. To be specific, sub-index database should be established, and examination score of individual demands are set aiming at power grid projects integrating transmission and distribution cost supervision rules as well as business attribute characteristics around multidimensional and differentiated financial examination of expenditure budget, namely 'necessity, economy and compliance'. Business demand input target is comprehensively reviewed based on the four dimensions of 'input, process, output and result' aiming at regulatory businesses. The matching degree between item reserve and strategic target is reasonably judged. Business development and return on benefits are focused mainly aiming at competitive businesses, input-output balance is regarded as the core element of financial review.

Actual working condition and specific evaluation contents of company power grid project are combined for regarding grid project process performance indicators and result performance index as two grade I indexes. Concrete classification of the company on power grid project budget

performance evaluation factors is combined from three links of budget work: preparation, implementation and final accounts. Company existing budget performance evaluation indicators are adopted as reference for preliminarily determining grade III indicators, including 54 indexes, which are classified in four grade II indexes according to its evaluation content.

The grade I index process indexes include three grade II indicators, namely input, process and output.

The input three-level indicators include net present value, internal rate of return, payback period, return on investment, asset-liability ratio, rate of deviation, deviation of current assets turnover rate, unit capacity, project investment, investment budget completion rate estimate error rate, project fund plan completion rate, power grid construction, retrofit constitution investment plan completion rate in science and technology input comprehensive plan.

Process grade 3 indicators include project construction timely rate, fixed time limit for a project, actual loss rate of rework, completion rate of productive maintenance cost, repair cost completion rate, operation maintenance cost of every ten thousand yuan of grid assets, yield rate of material procurement inventory cost budget, material settlement timely rate, project quality qualification rate, power grid project completion investment transfer timely rate, budgetary revenue enforcement rate, budgetary expenditure enforcement rate, cost budget deviation rate, controllable expense budget deviation rate, project budget cost completion rate, project budget cost error rate, project cost reduction rate, budget preparation plan timely completion rate and project budget plan one-time pass rate.

The output grade 3 indicators include: unit substation capacity supply, new unit substation capacity increased power supply, unit line power supply, new unit line increased power supply, unit investment increased power supply, load forecast accuracy rate, transmission forecast deviation rate and electricity sales forecast deviation rate.

Grade I index effect indicators include a grade II index namely result, it is measured with the following three indicators: total return on assets, return on net assets, main business cost income ratio, asset-liability ratio and liquidity ratio, current assets turnover, profits, average growth rate, growth rate of total assets, economic value added, deviation rate of current asset turnover, net profit growth budget completion rate, proportion budget deviation rate of cost budget in main business income, comprehensive line loss, line utilization rate and reliability of power supply.

(C) Determination of index weight

Analytic hierarchy process is adopted to determine the index weight in the paper. The basic principle of analytic hierarchy process (ahp) is to decompose the problem into various levels and components. Hierarchical structure is formed according to the sequence of general goal, sub-goal, evaluation standard and specific measures. The established power grid project budget performance indicator system includes two grade I indicators of 'process indicator' and 'result indicator'. Meanwhile, each grade I indicator has its own grade 2 indicators, which are further decomposed into a grade III indicator layer. Therefore, the power grid project budget performance index system constructed in the paper has a hierarchical structure, and the analytic hierarchy process has strong applicability.

Specifically, the basic steps of AHP can be summarized as follows:

Construction of judgment matrix: The most important aspect of AHP is to express the relative importance grade of two plans in the form of pairwise comparison importance.

Calculation of the weight of each element: firstly, the maximum eigenvalue of the constructed judgment matrix and its corresponding eigenvector are obtained, and then the weight of each index layer can be calculated.

Consistency check: the consistency is checked during inspection of coordination among all element importance degrees.

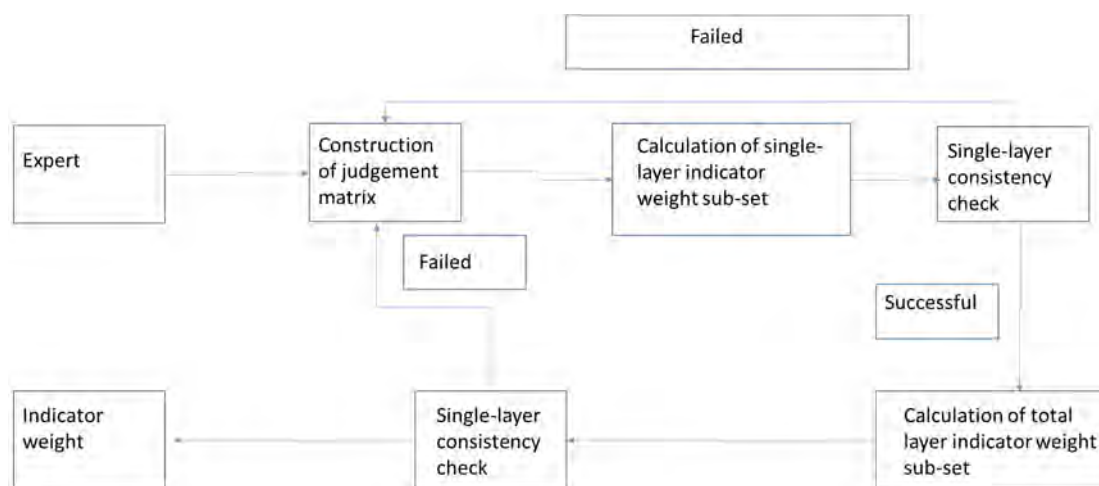


Figure 1. Implementation process of analytic hierarchy process

Weight of the following aspects should be considered in the process of determining the index weight: the weight of grade II index relative to grade I index, the weight of grade III index relative to grade II index, and the weight of grade III index relative to the grade I index.

5. Application of Budget Management Performance Rating System

The whole process analysis model of project budget management is constructed by breaking through the traditional post-evaluation mode and using the general idea of PDCA. The whole process analysis of project budget performance evaluation will be carried out in three stages: stage before, during and after the project. Economic results, social contribution, environmental improvement and customer satisfaction closely related to power grid project budget activity are include into the scope of supervision during pre-evaluation, thereby power grid project related departments should not only be responsible for the use of resources, but also be responsible for the result of resource usage, thereby prompting budget resources configuration change from power orientation to responsibility orientation, and building up budget cycle whole process and comprehensive budget performance supervision and management system. The traditional post-monitoring evaluation and feedback methods make the power grid projects lose the possibility of performance improvement in the implementation process, which is not conducive to the improvement of project budget performance management in construction due to long cycle and complexity of most power grid projects. Performance assessment and evaluation of the project budget in each sub-stage of the project are implemented through dynamic real-time assessment of the whole process of the project, it can promote the cost saving of the project, improve the operation efficiency of the power grid project, positively motivate employees, and achieve other multiple positive effects. Power grid project construction is in a period of rapid development, so it is of great significance to improve the corresponding post-evaluation system of budget performance and carry out whole-life and whole-process management of power grid projects.

The whole evaluation process is divided into eight link of three stages. Key work links of each stage of evaluation require effective connection. Corresponding responsibilities are completed according to different grades and different layers, thereby providing guarantee for the performance evaluation work mechanism. Key links in project budget performance evaluation mainly include the follows: the budget performance evaluation work start, budget performance goal review, key indicator tracking and monitoring, project budget performance self-evaluation, financial audit and screening, expert training, experts collective inspection and report preparation, executive accountability and public information, etc.

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