Manufacturing and Service Operations Management (2023)
Clausius Scientific Press, Canada

DOI: 10.23977/msom.2023.040502
ISSN 2616-3349 Vol. 4 Num. 5

Investigation on the Application of Cost Management in Operational Efficiency and Performance Evaluation

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Keywords: Cost Management, Operational Efficiency, Performance Evaluation, Economic Value Added Method

Abstract: With the intensification of global business competition, enterprises are increasingly focusing on improving operational efficiency to improve performance. Operational efficiency refers to the ratio of output to input in the utilization of resources by a company. Performance evaluation measures the performance of a company in achieving goals and providing value. Nowadays, improving operational efficiency and accurately evaluating performance are crucial for business success. Cost management is one of the important methods to improve operational efficiency and achieve excellent performance. Through cost management, enterprises can better understand resource utilization, identify waste and redundancy, and make targeted improvements. This article used the EVA (Economic Value Added) method to study the impact of cost management on operational efficiency and performance evaluation. Through data analysis, it was found that the economic value after cost management was 1.07775 million yuan. This numerical value was positive, demonstrating the value and effectiveness of the constructed model and method in operational efficiency and performance evaluation. Cost management could also optimize resource allocation, reduce costs, and improve operational efficiency and performance evaluation.

1. Introduction

With the intensification of market competition and increasing scarcity of resources, enterprises need to focus on refined management, effective utilization and cost control, improve operational efficiency, and achieve excellent performance [1]. With the continuous development of information technology, cost management is increasingly valued by enterprises [2].

In recent years, many scholars and researchers have conducted research on cost management. Costabile G proposed the concept of “strategic cost management”, emphasizing that enterprises needed to consider cost factors when formulating strategies [3]. In addition, Elghaish F proposed “value chain cost management”, emphasizing the need for enterprises to consider full lifecycle costs in the supply chain to reduce costs [4]. Radionova N emphasized that enterprises needed to consider all costs when formulating strategies to achieve profit maximization [5]. Nagasawa S pointed out that enterprises needed to consider cost factors when formulating strategies to improve their

competitiveness [6]. Bondarenko S believed that enterprises needed to establish their own value chain, analyze and manage it to achieve profit maximization [7]. These studies not only provide new ideas and methods for enterprises, but also play a positive role in promoting the improvement of cost management level in Chinese enterprises.

Through precise cost management, enterprises can optimize resource allocation, reduce costs, improve operational efficiency, and improve performance evaluation accuracy [8]. Therefore, in enterprise management, attention should be paid to the research and application of cost management, and innovative methods and tools should be continuously innovated to enhance the competitiveness and sustainable development ability of enterprises.

2. Cost Management

Cost management is the activity of an organization or enterprise in controlling and managing costs during the business process [9]. It includes cost estimation, cost analysis, and cost control, aiming to achieve effective cost control and optimization. Through cost management, organizations can better understand and grasp the cost structure, and identify areas for improvement. It can take corresponding measures to reduce costs, improve efficiency, and increase profits and competitiveness [10]. Cost management combines cost accounting with production and operation, and uses special management techniques and methods to carry out a series of management activities such as cost prediction, decision-making, planning, control, analysis and assessment with currency as the unit of measurement [11]. Its goal is to optimize resource allocation, reduce production costs, improve product/service quality, and ensure that operational activities meet budget and business objectives. The cost management process is shown in Figure 1.

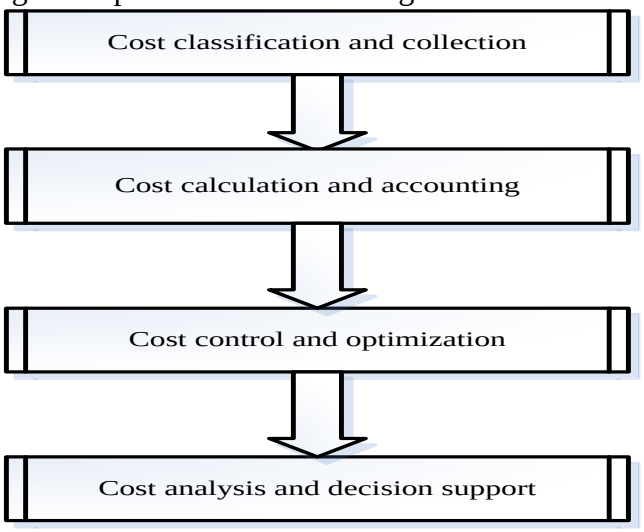

Figure 1: Cost management flowchart

The following is the detailed content of cost management:

Cost classification and collection: Various expenses are classified according to different categories, such as direct material costs, direct labor cost, manufacturing expenses, sales and administrative expenses, etc. This would help with subsequent cost analysis and decision-making.

Cost calculation and accounting: For different cost items, appropriate methods are used for calculation and accounting, including standard cost method, actual cost method, direct cost method, indirect cost method, etc. These methods can help measure costs and provide a basis for cost control.

Cost control and optimization: By setting budgets, developing cost control strategies, and

establishing internal control mechanisms, costs are controlled and optimized. At the same time, ineffective or wasted costs are identified and reduced, further improving efficiency and reducing costs.

Cost analysis and decision support: By comparing cost data of different cost projects, product lines, or business units for cost analysis, management is provided with decision support.

Cost benefit assessment: Investment and operational activities are subjected to cost benefit analysis to assess their potential returns and value. This helps determine whether to implement specific projects, purchase equipment, or implement cost reduction measures.

Through effective cost management, enterprises can improve resource utilization, reduce production costs, and increase profitability, thus gaining competitive advantages [12]. At the same time, cost management is also one of the important indicators for enterprise performance evaluation, which has a significant impact on business decision-making and strategic planning.

2.1 Current Situation of Cost Management

2.1.1 Current Status of Cost Management in Operational Efficiency

Excessive reduction: In order to reduce costs, companies may excessively reduce expenses, including layoffs, cuts in production equipment and supply chains, resulting in insufficient resources and affecting productivity and efficiency.

Quality decline: Cost management leads enterprises to reduce the quality of raw materials or neglect the quality control of products and services, which may lead to a decline in product quality, affecting customer satisfaction and market competitiveness.

Dispersion of executive energy: Excessive focus on cost management distracts the executive team, making it difficult to focus on strategic planning and business development, which affects the long-term sustainable development of the enterprise.

Decreased employee morale: Cost management measures such as large-scale layoffs or reduced benefits may lead to a decrease in employee morale, affecting employee motivation and teamwork.

Limited innovation ability: Overemphasizing cost management may inhibit a company's innovation ability because innovation typically requires additional resources and funding, and the pressure of cost management may limit innovation investment [13].

2.1.2 Current Status of Cost Management in Performance Evaluation

Short term emphasis: Some cost management measures may focus too much on short-term benefits, such as reducing costs and increasing profits, while neglecting factors of long-term business growth and sustainable development. This may lead to performance evaluation biased towards short-term profits, making it difficult to comprehensively evaluate the overall performance of the enterprise.

Focusing on numerical indicators: Cost management usually uses various numerical indicators to measure cost reduction, such as the percentage of cost reduction and the amount of savings. However, if a company only focuses on these numerical indicators, it may overlook other important performance indicators, such as customer satisfaction, product quality, employee engagement, etc., and cannot comprehensively evaluate performance.

Impact on innovation motivation: Overemphasizing cost management may have a negative impact on innovation motivation. Some innovative projects require some investment and adventure. However, if enterprises place too much emphasis on cost control, it may limit innovation investment and actions, and have a negative impact on innovation performance evaluation.

Neglecting quality and value: Cost management focuses on improving efficiency based on

effectively managing expenses, but sometimes it may overlook the quality and value of products or services. If performance evaluation only focuses on cost control while neglecting product quality and customer value, it may lead to inaccurate performance evaluation results.

In order to solve these problems, enterprises should adopt comprehensive performance evaluation methods, take full account of cost management, and also pay attention to other performance indicator, such as customer satisfaction, market share, innovation ability, to ensure a comprehensive and objective evaluation of the overall performance of enterprises.

2.2 Importance of Cost Management

Operational efficiency reduces costs: Efficient operational processes can save time, reduce resource waste, and provide better product and service quality [14]. By improving production efficiency, shortening production cycles, and reducing unnecessary links, the cost of unit products or services can be reduced, thereby achieving the goal of cost management.

Mutual promotion and complementarity: Cost management and operational efficiency are mutually reinforcing and complementary relationships. Good cost management requires efficient operational processes as support, while efficient operational processes require cost management to provide continuous resource optimization and cost control. The two form a virtuous cycle and jointly promote the sustainable development of the enterprise.

Competitiveness enhancement: Through effective cost management and optimization of operational efficiency, enterprises can reduce product or service prices and improve competitiveness. In a fiercely competitive market, having higher operational efficiency and lower cost advantages can help enterprises gain more market share and achieve profitable growth.

Cost management promotes operational efficiency: Effective cost management can help enterprises reduce costs, improve resource utilization efficiency, and optimize operational processes. For example, by improving supply chain management, adopting cost saving measures, and optimizing production plans, production efficiency can be improved, material waste and inventory costs can be reduced, thereby improving operational efficiency [15].

In short, cost management and operational efficiency are closely related. Through reasonable cost control and optimization of operational processes, enterprises can achieve maximum utilization of resources, minimize costs, and improve business performance. This is crucial for the long-term development and competitiveness improvement of enterprises.

There is a close relationship between cost management and performance evaluation. Firstly, cost management helps to optimize the allocation of resources. By analyzing and controlling various costs, enterprises can better understand the utilization of resources and make reasonable decisions. For example, by conducting regular cost accounting and cost-benefit analysis, enterprises can identify costly links or unnecessary expenses, and take timely measures to adjust to achieve the optimal allocation of resources [16].

Secondly, cost management is of great significance for reducing costs. Through comprehensive cost management, enterprises can analyze and optimize different cost projects [17]. For example, using cost accounting methods to identify non value added activities and eliminate waste can help businesses reduce production and operational costs. In addition, through effective cost management cooperation with suppliers, enterprises can negotiate and optimize procurement costs, thereby reducing the overall cost burden.

At the same time, cost management also plays an important role in operational efficiency and performance evaluation. By establishing cost management indicators and performance evaluation systems, enterprises can conduct quantitative analysis and evaluation of various operational activities. For example, using cost control indicators and performance measurement indicators,

enterprises can evaluate the operational status of different departments or projects, and take timely measures to adjust and improve, in order to improve overall operational efficiency and performance level.

Cost management indicators for performance evaluation: Cost management can provide one of the important indicators for evaluating performance. Through cost control and analysis, enterprises can determine performance indicators directly related to costs, such as cost-benefit ratio, unit cost, profit margin, etc., to evaluate the performance of businesses and departments.

Performance evaluation feedback cost management: The results of performance evaluation play a feedback role in cost management. By evaluating performance, potential cost issues or capability weaknesses can be identified and used as a basis for improving cost management [18]. For example, if the performance evaluation results of a business unit are lower than expected, it may be necessary to further analyze its cost structure, identify the reasons for low cost efficiency, and make improvements.

Joint promotion of organizational effectiveness: Cost management and performance evaluation jointly promote the improvement of organizational effectiveness. Cost management helps optimize resource allocation and workflow, reduce resource waste and cost expenditures, and improve economic efficiency [19]. Performance evaluation, on the other hand, drives the improvement of overall performance by measuring and motivating employees' performance. Combining the two can help organizations achieve efficient operations and good performance.

Goal oriented management methods: Cost management and performance evaluation are both goal oriented management methods. Cost management promotes the rational utilization of resources and the minimization of costs by setting cost control goals. Performance evaluation guides employees to work hard towards expected goals by setting performance indicators and goals. Both work together to ensure that the organization achieves its predetermined goals within limited resources [20].

In summary, due to the characteristics of operational efficiency and performance evaluation, the application of cost management can improve operational efficiency and promote performance evaluation. By using the EVA method, the EVA can be calculated based on the financial data and cost management strategies of the enterprise, and compared and analyzed with indicators such as revenue and profit margin to evaluate the impact of cost management on operational efficiency and performance evaluation.

3. Data Source and Result Evaluation

3.1 Cost Estimation

Cost estimation is mainly reflected in four aspects in cost management, as shown in Figure 2:

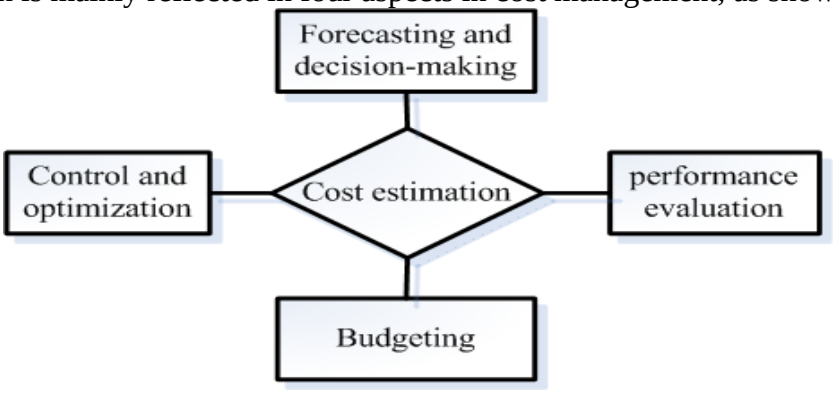

Figure 2: Four aspects of cost estimation

By estimating various costs, enterprises can better predict future cost situations and provide a basis for decision-making. Cost estimation is also the foundation of cost control and optimization. By comparing and analyzing the scale and proportion of different cost projects, enterprises can identify areas of high cost or low efficiency, and take corresponding measures to control and optimize costs. In addition, cost estimation is also one of the important indicators for performance evaluation. Enterprises can compare actual costs with expected costs to evaluate cost execution and performance. At the same time, cost estimation is also measured with other Performance indicator to comprehensively evaluate the performance of enterprises. Finally, cost estimation is the foundation of budget preparation and plays a decisive role in formulating a reasonable budget plan. In summary, cost estimation is an important tool and method that helps enterprises improve efficiency, reduce costs, and optimize performance, so as to maintain competitiveness and achieve sustainable development.

3.2 Economic Value Added Method

EVA is a financial indicator used to measure a company's performance, which can evaluate the return on investment activities. EVA calculates the Surplus value by subtracting the cost of capital. The specific process is shown in Figure 3:

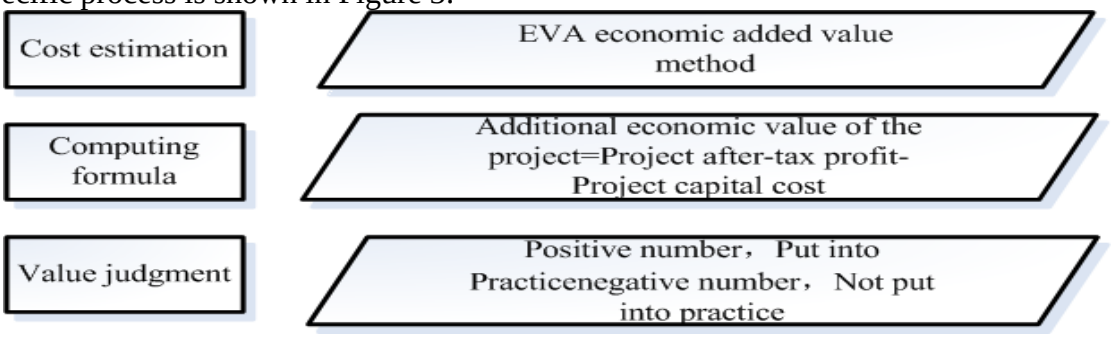

Figure 3: EVA method flow chart

The calculation formula for EVA method is as follows:

$$\text{Economic profit} = \text{After-tax operating profit of enterprises} - \text{Cost of capital} \quad (1)$$

Among them, the formulas are as follows

$$\text{After-tax operating profit of enterprises} = \text{Project after-tax profit} - \text{Income tax amount} \quad (2)$$

$$\text{Project capital cost} = \text{Total project capital} \times \text{Average capital cost rate} \quad (3)$$

Therefore, the formula is as follows:

$$\text{Additional economic value of the project} = \text{Total profit of the project} - \text{Accrued tax} - \text{Total project capital} \times \text{Average capital cost rate of the project} \quad (4)$$

Among them, net profit refers to the net income of a company during a specific period, which is deducted from expenses such as taxes, interest, and equity compensation.

EVA provides an indicator to determine whether a company has created economic value by calculating the difference between net profit and cost of capital. A positive EVA indicates that the enterprise has created value beyond its cost of capital, while a negative EVA indicates that the enterprise has not created enough value. It should be noted that the calculation method of EVA may vary by company and industry, and different organizations may adjust or add other factors in the calculation to more accurately measure the company's economic added value. The standard for evaluating whether a project has started is the added economic value of the project. If the added

economic value is positive, it means that the project can be implemented and can bring efficiency and evaluation gains; if the added economic value is negative, it is more advantageous to abandon the project. This article uses the project case of Company B to obtain data as shown in Figure 4.

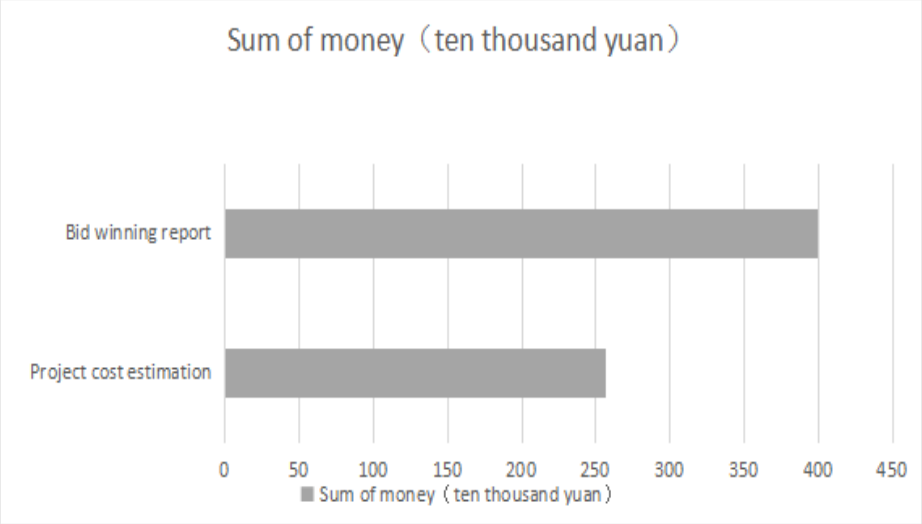

Figure 4: Case data diagram

The EVA calculation results are shown in Table 1:

Table 1: EVA calculation results of Company B's project

Name	Calculation basis	Sum of money (ten thousand yuan)
Project cost estimation	Bidding documents	256.3
Bid winning report	Tender price	400
Total profit of the project	Quotation in the project-Project cost estimation	143.7
Project income tax	Total profit of the project×5%,Tax regulations	7.185
Project comprehensive management cost	Total profit of the project×20%,company regulations	28.74
Additional economic value of the project	Total profit of the project-Project income tax-Project comprehensive management cost	107.775

3.3 Capital Investment

Capital investment refers to the total amount of capital used by a company for operational and growth activities during a specific period, including long-term debt and shareholder equity. The cost of capital ratio refers to the opportunity cost rate of capital used by a company, also known as the weighted average cost of capital, which reflects the cost of attracting capital for the company.

3.4 Various Indicators

EVA level: The EVA level is calculated and compared to understand the net profit creation and capital utilization efficiency of enterprises.

Capital cost: The capital cost calculated by EVA is determined and included, reflecting the opportunity cost to be paid for the use of funds.

Cost control effectiveness: The impact of cost management measures, changes in cost structure, and achievement of cost control objectives on economic added value is evaluated.

Comparison of EVA with other indicators: EVA is compared with indicators such as net profit, income, and return on investment, thus analyzing their relationships and evaluating the advantages of EVA in reflecting the true economic value of enterprises.

3.5 Value Determination

Based on the above analysis in this article, its economic added value is positive, indicating that the project can be implemented and can bring efficiency and evaluation gains.

4. Investigation Findings and Recommendations

Based on the analysis of EVA results, corresponding management cost application suggestions can be proposed. By analyzing Eva's results, it can be found that the management costs of enterprises vary across different regions, industries, and scales. In order to better achieve cost management, it is necessary to develop corresponding application suggestions based on these differences.

Firstly, for enterprises in different regions, it is necessary to develop management cost application plans that are suitable for the enterprise based on the local economic development level and market demand. For example, for enterprises engaged in manufacturing or service industries, more refined cost control methods can be adopted, such as strengthening the optimization of production processes and supply chain management, and improving production efficiency.

Secondly, for enterprises of different industries and scales, it is necessary to develop more personalized and diversified cost application plans based on their industry characteristics and market demands. For example, for enterprises engaged in high-tech industries such as software development or internet services, more flexible and diversified cost control methods can be adopted; for enterprises engaged in traditional industries such as logistics and retail, more refined and standardized cost management methods can be adopted.

In addition, enterprises also need to continuously carry out cost control and optimization to improve economic efficiency and competitiveness. For example, more scientific and reasonable procurement methods can be adopted in the procurement process. More refined process flow can be adopted in the production process, and more flexible and diverse marketing strategies can be adopted in the sales process.

In summary, by analyzing the EVA results and providing application suggestions, it is possible to better understand the cost management issues of enterprises and take corresponding measures for improvement and optimization. Only in this way can market demand and the achievement of enterprise development goals be better met.

In summary, cost management and performance evaluation are interdependent and mutually reinforcing relationships. Effective cost management helps to accurately evaluate performance and provide a basis for performance improvement; a good performance evaluation can in turn promote the optimization of cost management, thereby promoting the sustained development of the organization and improving performance.

5. Conclusions

Cost management plays an important role in operational efficiency and performance evaluation. Through effective cost management, enterprises can optimize resource allocation, and reduce costs, thereby improving operational efficiency and accuracy of performance evaluation. In daily

operations, enterprises should attach great importance to cost management and incorporate it into strategic planning and decision-making processes to achieve sustainable development and competitive advantage. However, there are some limitations in current research, including deficiencies in data and methods. In order to further improve the quality and depth of the article, it is necessary to rely on more data sources for in-depth thinking and analysis. This would help to gain a more comprehensive understanding of the importance of cost management for enterprises and explore more effective cost management strategies and methods.

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