



Data Analysis and Optimization Strategies in Financial Management

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DOI: 10.32629/memf.v5i2.1949

Abstract: In the increasingly fierce market competition, the decision-making level of enterprises can directly affect their future. Once a decision is made incorrectly, it can cause a significant crisis for the company. The information data in enterprise financial management is the most important reference for company leaders when making decisions. In corporate governance, financial analysis can comprehensively reflect the operational situation of a company. Financial analysis can provide strong data support for the production and operation of enterprises, and it is an effective way to improve operational efficiency. This article optimizes asset allocation based on data analysis and optimization strategies to achieve maximum return on investment portfolio. The current value, annual return, and risk level of stocks for different asset classes are 10 million yuan, with an annual return of 15%. The current value of the bond is 8 million yuan, with an annual yield of 6%. This article provides a reliable basis for financial management and business decision-making.

Keywords: financial management, data analysis, optimization strategies, business decision-making, corporate governance

1. Introduction

Financial analysis is of great significance for improving the financial management level of enterprises and ensuring the smooth and orderly development of the company. Professional and rigorous financial analysis can enable enterprises to objectively and comprehensively grasp and understand the current financial situation, accurately analyze and judge various problems that may arise in the future financial management work of the enterprise. Only by enabling the leadership of the enterprise to timely and accurately recognize the current “assets” of the company, can it make better decisions and deployments, and thus put the enterprise in a proactive position in long-term market competition. Meanwhile, high-quality financial analysis also helps to enhance the company’s position and operational capabilities in the industry. In financial analysis, corporate investors can have a comprehensive understanding of the production and operation situation, financial situation, and other aspects of the enterprise

This article first provides the relevant background of the application of data analysis and optimization strategies in financial management, points out the shortcomings in current financial management, and facilitates the preparation of corresponding plans in the future. Secondly, it is to explore financial analysis in enterprise management. The financial management of enterprises cannot be separated from various financial information, such as asset turnover rate, cash flow, debt ratio, etc. This type of data is the financial indicator that managers attach the most importance to, providing data support for financial analysis. Finally, solutions for the informatization construction of enterprise financial management can be provided. To achieve the informatization of financial management in enterprises, it is necessary to change mindset, better promote the construction of enterprise informatization, integrate enterprise resources, and promote the overall development of the enterprise.

2. Related Work

Data analysis has emerged with the development of information technology, which is suitable for financial management of enterprises and has its unique functions. This plays a very important role in improving the efficiency and quality of the company’s financial management, and enhancing the competitiveness of the enterprise. Pan Yaqiong believed that financial management is a very important link in the development process of small and medium-sized logistics enterprises. It plays a crucial role in improving the market competitiveness and management level of enterprises [1]. Lu Lin analyzed the ability requirements for financial management talents in the digital economy environment, and also analyzed the problems in the current teaching of financial management courses in vocational colleges [2]. Liu Jing believed that in the era of the internet, financial management in vocational schools has greatly improved in various aspects. In this process, there are still many problems in the financial management of vocational schools, which can no longer meet the development of vocational schools in the current online environment [3]. Zhang Bo believed that tax planning is an important component of

a company's financial management work, which can make the financial management of the enterprise more efficient, reduce the tax cost of the enterprise, and thus enhance the core competitiveness of the enterprise [4]. However, their research lacks optimization of financial management strategies.

Data analysis is a process that plays a bridging role in the financial management of enterprises. This article analyzes the financial data of a company, including its financial statements, balance sheet, income statement, etc. It is possible to analyze the influencing factors of the internal environment of the enterprise and improve them, so as to combine the operation and management of the enterprise and analyze the management elements of the enterprise.

3. Methods

3.1 Financial Analysis in Enterprise Management

Financial analysis is an effective way to improve the operational efficiency of enterprises. Maximizing operational efficiency is the fundamental goal of enterprise development. In practical operation, it is necessary to develop a scientific financial management strategy based on its own actual situation. It can enable various types of capital to be allocated reasonably, improve the investment return and utilization efficiency of capital, and thus promote the maximization of business interests. To achieve this goal, it is necessary to use financial analysis to collect various data on the daily operations of the company and conduct in-depth analysis. It can timely detect various risks, reduce the error rate of financial decisions, and effectively adjust the strategy of financial management. It can enhance the practical use and value of financial management, ensure that the company's strategic plan finds the right direction in the fiercely competitive market, achieve sustainable development, and ensure the maximum of business and social benefits. This has certain guiding significance for enterprise risk management. Currently, many companies operate and develop in a diversified manner. With the expansion and development of its scale, various financial activities have become more frequent than before, and the flow of funds has also become more rapid, resulting in increasing risks. If the enterprise itself encounters some problems, such as backward management, investment failure, etc., it may face huge operational risks. Conducting financial analysis work can carefully consider various business activities and capital operations of the enterprise, so that the company can timely identify problems and weak links in business management, in order to better prevent and control risks.

The Capital Asset Pricing Model (CAPM) is used to estimate the expected return on assets, which determines the necessary return on assets based on their systemic risk. The CAPM formula is as follows:

$$E(R_i) = R_f + \beta_i \cdot (E(R_m) - R_f) \quad (1)$$

Among them, $E(R_i)$ is the expected return rate of asset i ; R_f is the risk-free rate of return; $E(R_m)$ is the expected return rate of the market portfolio.

Present value PV and future value FV are commonly used concepts in financial management to calculate the value of funds at different time points. Present value PV formula:

$$PV = \frac{FV}{(1+r)^n} \quad (2)$$

Among them, PV is the present value; FV is the future value; r is the discount rate or interest rate; n is the number of periods or time interval.

Future value FV formula:

$$FV = PV \cdot (1+r)^n \quad (3)$$

In financial management, the calculation of present value and future value is crucial for investment decision-making, fund planning, and financial forecasting [5].

The internal rate of return is the expected annualized rate of return of a project, which makes the net present value NPV of the project zero. IRR is an important indicator for measuring the return on investment of a project. IRR is usually solved through iterative calculations or using financial software, without a direct mathematical formula, but can be indirectly understood through the following NPV formula:

$$NPV = \sum_{t=1}^n \frac{C_t}{(1+IRR)^t} \quad (4)$$

Among them, C_t is the cash flow at time t (which can be positive or negative).

3.2 Solutions to the Informationization Construction of Enterprise Financial Management

3.2.1 Change mindset

The most significant change in mindset is the understanding and support of financial management informatization by the management team of the enterprise. Of course, this also cannot be achieved without the strong support and guidance of enterprise leaders. Clarifying the direction of enterprise financial management informatization is of great significance for promoting enterprise development and construction. Although this kind of change is not easy, the results are very obvious. To achieve the informatization of financial management in enterprises, it is necessary to change mindset and integrate enterprise resources. Only in this way can people better promote the construction of enterprise informatization and the overall development of the enterprise.

3.2.2 Software Technology Development

The advancement of software technology has made financial management of enterprises a forward-looking tool, and its application can effectively save human, material, and financial resources of enterprises. The foundation of software development is within the enterprise, which is based on reality, needs, market trends, utilization of market resources, software development and application, as well as collaboration between enterprises. Enterprises can achieve software sharing among departments through shared systems, which can develop a financial management software suitable for their own enterprise, in order to be put into use and play a role as soon as possible.

3.2.3 Improve the ability of financial personnel in enterprises

Enterprise accountants must enhance their professional knowledge in order to enhance their professional competence. When recruiting a financial manager for a company, in addition to assessing their business capabilities, it is also necessary to assess their mastery and application of computer skills. For financial management personnel who have already entered the enterprise and are still working, they should increase their training efforts. At the same time, it is necessary to motivate employees who continuously improve their own qualities and enhance their financial management and accounting abilities. Enterprises must have a high level of specialization and technology in order to meet the requirements of modern financial management, thereby promoting their development and enhancing their competitiveness.

3.2.4 Risk awareness cultivation

The most important issue in financial management of enterprises is how to ensure information security. When enterprises carry out information construction, they inevitably have to deal with the market. Therefore, how to ensure their own information security has become the top priority of enterprise financial management informatization. Enterprises should establish their own risk prevention and information security defense systems, and take preventive measures when there are no information security issues; When information security faces challenges, network security can still stand up and safeguard the interests of the company. When facing information security issues, it is necessary to pay attention to software encryption, otherwise once data leakage occurs, it can cause significant losses to the enterprise.

4. Results and Discussion

4.1 Maximum Benefit

Evaluation indicator: Enterprise profit model: Using the optimal strategy to adjust the cost composition of the enterprise can maximize its profit.

The sales unit price, unit variable cost, and fixed cost of different products are shown in Table 1. The sales unit price of Product A is 50 yuan, with a unit variable cost of 30 yuan and a fixed cost of 20000 yuan per month.

Table 1. Sales unit prices, unit variable costs, and fixed costs for different products

Product	Sales unit price (yuan)	Unit variable cost (yuan)	Fixed cost (yuan)
A	50	30	20000
B	60	40	15000
C	70	50	10000

4.2 Asset Allocation Optimization

Evaluation indicator: Investment portfolio return rate

Method: On this basis, this article optimizes asset allocation based on data analysis and optimization strategies to achieve maximum return on investment portfolio.

The current value, annual return, and risk level of different asset categories are shown in Table 2. The current value of

the stock is 10 million yuan, with an annual return of 15%. The current value of the bond is 8 million yuan, with an annual yield of 6%.

Table 2. Current value, annual return, and risk level of different asset categories

Asset category	Current value (10000 yuan)	Annual yield (%)	Risk level (1-5)
Shares	1000	15	4
Bond	800	6	2
Cash	200	2	1
Real estate	500	8	3
Other investments	300	10	5

4.3 Cash Flow Management

Evaluation indicator: Peak cash flow method: Data analysis and optimization strategies can be used to maximize the control of capital inflows and outflows and reduce peak cash flows.

The cash inflows and outflows for different months are shown in Figure 1. In January, there was a cash inflow of 1.5 million yuan and a cash outflow of 1 million yuan. In February, there was a cash inflow of 2 million yuan and a cash outflow of 1.2 million yuan.

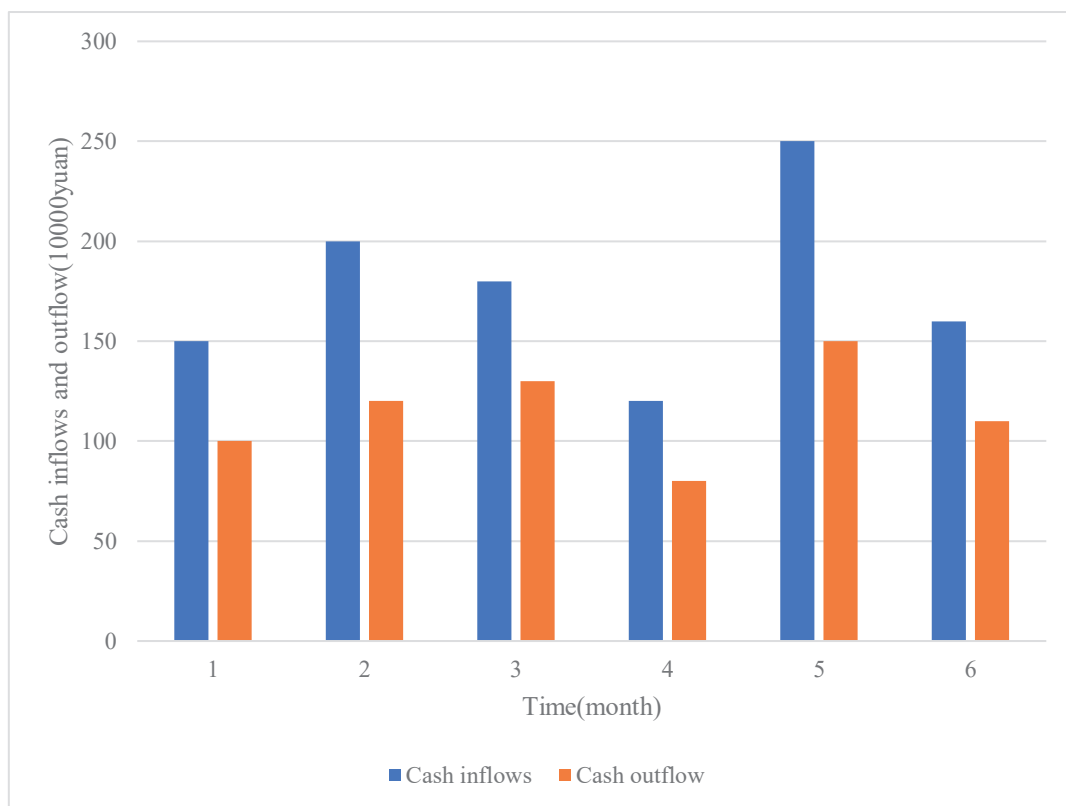


Figure 1. Cash inflows and outflows in different months

4.4 Financial Risk Management

Evaluation indicators: Financial risk indicators (such as shareholder equity, annual interest expenses, etc.)

Method: Through data analysis and optimization strategies, optimize financing structure and reduce financial risks.

The values of different financial indicators are shown in Figure 2. The total assets are 100 million yuan, the total liabilities are 60 million yuan, and the shareholder's equity is 40 million yuan.



Figure 2. Values of different financial indicators

4.5 Market Trend Prediction

Evaluation indicator: Market forecast accuracy

Method: Utilize data analysis and optimization strategies to predict market trends and improve investment decisions.

The market index and investor sentiment index for stock prices on different dates are shown in Figure 3. On January 1, 2022, the stock price was 100 yuan, and the investor sentiment index was 60.



Figure 3. Stock prices, market indices, and investor sentiment indices for different dates

4.6 Cost Control Optimization

Evaluation indicator: Cost reduction rate

Method: Based on data analysis and optimization strategies, discover and optimize the company's cost structure to achieve the goal of cost reduction.

The monthly costs of different cost categories, annual costs, and cost ratios are shown in Table 3. The monthly cost of direct materials is 500000 yuan, and the annual cost is 6000000 yuan, accounting for 40% of the cost. The monthly cost of direct labor is 300000 yuan, and the annual cost is 3600000 yuan, accounting for 24% of the cost.

Table 3. Monthly costs, annual costs, and cost ratios for different cost categories

Cost category	Monthly cost (yuan)	Annual cost (yuan)	Cost proportion
Direct materials	500000	6000000	40%
Direct labor	300000	3600000	24%
Manufacturing costs	200000	2400000	16%
Sales and marketing expenses	150000	1800000	12%
Management expenses	100000	1200000	8%
Research and development expenses	50000	600000	4%

5. Conclusions

In the context of modern market competition, enterprises should focus on improving their production and operation management level. Only in this way can they grasp the initiative of the market and win better development. Financial analysis is the primary link in enterprise financial management and an important indicator for measuring a company's operational status. Therefore, enterprises should fully recognize the importance of strengthening financial analysis for the smooth and orderly development of enterprises, and include this work in the key management items of enterprises. Strict and meticulous management should be carried out to better improve the comprehensive development ability of enterprises and provide guarantees for their long-term and stable development. In the future, in the process of financial analysis, enterprises should continuously optimize their financial analysis systems based on their actual operating conditions, ensuring the smooth operation and healthy development of the company.

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