Accounting and Corporate Management (2023)
Clausius Scientific Press, Canada

DOI: 10.23977/acccm.2023.051219
ISSN 2523-5788 Vol. 5 Num. 12

The application of hospital investment decision-making and financial analysis methods

Yuanwei Li

West China Second University Hospital, Sichuan University, Chengdu, Sichuan, China

Keywords: Hospital investment decision-making; Financial analysis; Improvement measures

Abstract: Starting from the theoretical foundation of hospital investment decision-making and financial analysis, this article explores the practical application of hospital investment decision-making methods and financial analysis methods. Firstly, the theories of hospital investment decision-making and financial analysis were introduced, and the relationship between the two was elaborated. Secondly, the methods of hospital investment decision-making were elaborated in detail, including the net present value method, internal rate of return method, and accounting rate of return method in capital budgeting decision-making, as well as sensitivity analysis, simulation analysis, and confidence interval analysis in risk assessment. Next, a comprehensive introduction was given to the financial analysis methods of hospitals, including financial ratio analysis, financial trend analysis, and financial risk analysis. Finally, improvement measures were proposed to address existing issues, such as improving the financial management system, enhancing the application level of financial analysis methods, strengthening financial risk management, and optimizing investment decision-making processes. This article aims to provide theoretical guidance and practical reference for hospital investment decision-making and financial analysis, in order to promote the healthy development of hospitals.

1. Introduction

With the rapid development of China's economy, the medical and health industry is increasingly valued. Hospitals, as an important component of the medical and health system, their investment decisions and financial analysis are particularly important. Hospital investment decision-making refers to the process of selecting and making decisions on different investment projects within limited resources to ensure the long-term development and economic benefits of the hospital. Financial analysis, on the other hand, evaluates the financial condition and operational efficiency of a hospital by analyzing its financial data, providing a basis for investment decisions.

2. Theoretical basis for hospital investment decision-making and financial analysis

2.1. Hospital investment decisions

The theory of hospital investment decision-making mainly includes cash flow theory, discounted

cash flow theory, real options theory, etc[1]. The cash flow theory suggests that investment decisions should be based on the cash flow status of the project, and the optimal project should be selected by comparing the cash flows of different investment projects. The discounted cash flow theory emphasizes discounting future cash flows to the present in order to make reasonable comparisons of cash flows at different time points. The theory of real options suggests that investment decisions should consider the flexibility and uncertainty of the project, providing a certain buffer space for the project. These theories provide a theoretical basis for hospital investment decisions, helping hospitals make scientific and reasonable decisions when facing multiple investment choices.

2.2. Financial Analysis Theory

Financial analysis theory mainly includes financial ratio analysis, financial trend analysis, financial risk analysis, etc. Financial ratio analysis evaluates the financial condition of a hospital by calculating and comparing indicators such as its solvency[2], profitability, and operational capabilities. Financial trend analysis focuses on the changing trends of hospital financial data to reveal the direction and potential problems of hospital operation and development. Financial risk analysis focuses on evaluating the debt and operational risks of hospitals in order to timely detect and respond to financial risks.

2.3. The relationship between hospital financial analysis and investment decision-making

Financial analysis is closely related to investment decision-making. Financial analysis provides important basis for investment decisions. By evaluating the financial situation of hospitals, decision-makers can understand their debt repayment[3], profitability, and operational capabilities, thereby providing strong support for investment decisions. At the same time, investment decisions can also affect the financial situation of hospitals. Reasonable investment decisions can help improve the operational efficiency and financial situation of hospitals, while conversely, it may lead to financial risks. Therefore, hospitals should maintain a close connection between investment decisions and financial analysis to ensure the rationality and financial benefits of investment decisions.

3. Hospital investment decision-making methods

3.1. Capital Budget Decision

Capital budget decision-making is the core link of hospital investment decision-making, mainly involving project investment, expansion, mergers and acquisitions, and other matters. When making capital budgeting decisions[4], hospitals need to evaluate different investment projects and choose projects with good economic benefits and investment returns.

3.1.1. Net present value method

The net present value method is a commonly used capital budgeting decision-making method, which is based on discounting the expected future cash flows of a project to the present and calculating the net present value of the project. If the net present value is positive[5], it indicates that the investment return of the project is higher than the investment cost and has a certain investment value. When making investment decisions, hospitals can use the net present value method to compare multiple investment projects and choose projects with higher net present values for investment.

3.1.2. Internal rate of return method

The internal rate of return method is another commonly used capital budgeting decision-making method, whose main purpose is to find a discount rate that makes the net present value of an investment project zero[6]. The internal rate of return method can evaluate the independent profitability of investment projects, that is, whether the project can achieve profitability without external financing conditions. When hospitals use the internal rate of return method to make investment decisions, they need to compare the internal rates of return of different investment projects and choose projects with higher internal rates of return to achieve better investment returns. Meanwhile, the internal rate of return method can also help hospitals evaluate project risks. For projects with lower internal rates of return, hospitals need to carefully consider their investment risks.

3.1.3. Accounting rate of return method

Accounting rate of return method is an investment decision-making method based on accounting data, which mainly evaluates the investment return of an investment project by calculating the ratio of the annual average net return of the investment project to the cost of funds. The calculation formula for the accounting rate of return method is: Accounting rate of return=(average annual net return of investment project/investment amount) x 100%. When making investment decisions, hospitals need to compare the accounting rate of return of investment projects with the cost of funds. If the accounting rate of return is greater than the cost of funds, it indicates that the investment project has good profitability and can be considered for investment[7]. The advantage of the accounting rate of return method is that it is easy to calculate and understand, and is suitable for hospitals with limited funds, pursuit of quick investment recovery, and low management level. However, this method does not take into account the time value of cash inflows and the time value of funds, which may affect the accuracy of decision-making.

3.2. Risk assessment methods

3.2.1. Sensitivity analysis

Sensitivity analysis is the process of adjusting project parameters to evaluate the degree of change in project economic performance indicators, in order to reveal the sensitivity of the project to uncertain factors[8]. Hospitals can use sensitivity analysis to identify project risk points and provide reference for investment decisions.

3.2.2. Simulation analysis

Simulation analysis is the process of constructing mathematical models to simulate the operation of a project under different conditions, in order to evaluate the risks and benefits of the project. Hospitals can use simulation analysis to simulate various scenarios of investment projects, predict their performance in different situations, and provide a basis for investment decisions.

3.2.3. Confidence interval analysis

Confidence interval analysis is a statistical method used to calculate the confidence interval of project economic benefits indicators[9], in order to evaluate project risks. Hospitals can use confidence interval analysis to quantitatively evaluate the risks of investment projects and improve the accuracy of investment decisions.

4. Hospital financial analysis methods

4.1. Financial ratio analysis

4.1.1. Analysis of solvency

Financial ratio analysis is a method of evaluating a hospital's financial condition, profitability, operational capabilities, and other aspects by calculating and comparing a series of financial ratio indicators. Among them, the analysis of solvency mainly focuses on the debt level and solvency of hospitals, and commonly used indicators include asset liability ratio, current ratio, quick ratio, etc. The asset liability ratio reflects the proportion of borrowing and financing in hospital assets, and reflects the hospital's debt risk; The current ratio and quick ratio respectively reflect the hospital's short-term solvency[10]. By calculating and comparing these indicators, hospitals can understand their own debt paying ability and provide a basis for financial decision-making and risk management.

4.1.2. Profitability analysis

Profitability analysis is an important method for evaluating the operational efficiency and investment return of hospitals, mainly focusing on the profitability level and ability of hospitals. Common financial ratio indicators include net profit margin, return on total assets, investment return rate, etc. The net profit margin reflects the ratio of a hospital's net profit to operating revenue, and is a basic indicator to measure the hospital's profitability; The return on total assets reflects the efficiency of hospital asset utilization, which is the ratio of net profit generated by assets to the average total assets; The return on investment reflects the level of return on hospital investment projects. By calculating and comparing these indicators, hospitals can understand their own profitability and provide a basis for investment decisions and financial risk management.

4.1.3. Analysis of operational capacity

Operational capability analysis is an important method for evaluating the operational efficiency and resource utilization level of hospitals, mainly focusing on the operational level and efficiency of hospitals. Common financial ratio indicators include accounts receivable turnover, inventory turnover, total asset turnover, etc. The accounts receivable turnover rate reflects the speed and efficiency of hospital accounts receivable collection; The inventory turnover rate reflects the turnover speed and efficiency of hospital inventory; The total asset turnover rate reflects the utilization efficiency of hospital assets, which is the ratio of revenue generated by assets to the average total assets. By calculating and comparing these indicators, hospitals can understand their operational capabilities and provide a basis for investment decisions and financial risk management.

4.2. Financial Trend Analysis

4.2.1. Vertical analysis

Vertical analysis method is to evaluate the trend of changes in hospital financial status by comparing data from different items in hospital financial statements over different periods. This method usually uses a certain period as a benchmark to calculate the ratio or percentage between each period's projects and the same project in the benchmark period, forming a series of comparable trend indices. By observing the changes in these trend indices, hospitals can understand the changes in their profitability, debt repayment ability, operational ability, and other aspects, providing a basis

for investment decision-making and financial risk management. At the same time, when conducting vertical analysis, attention should be paid to the selection of base period data, consistency of calculation methods, and the influence of accidental factors to ensure the accuracy of the analysis results.

4.2.2. Horizontal analysis

Horizontal analysis method is to evaluate the financial status and competitiveness of hospitals in the industry by comparing the data of different hospitals in the same period for the same item in hospital financial statements. This method usually uses the average level of a certain region or industry as a benchmark to calculate the ratio or percentage between hospitals and the benchmark level, forming a series of comparable horizontal indices. By observing the changes in these horizontal indices, hospitals can understand their relative levels of profitability, debt repayment ability, operational ability, and other aspects, providing a basis for investment decision-making and financial risk management. Meanwhile, when conducting horizontal analysis, attention should be paid to the selection of benchmark levels, consistency of calculation methods, and the impact of industry differences to ensure the accuracy of the analysis results.

4.2.3. Comparative analysis

Comparative analysis method is a method of evaluating the financial status and competitiveness of a hospital by comparing the data in its financial statements with the financial data of other hospitals in the same industry, scale, and region. This method usually uses the average level of a certain region or industry as a benchmark to calculate the ratio or percentage between hospitals and the benchmark level, forming a series of comparable horizontal indices. By observing the changes in these horizontal indices, hospitals can understand their relative levels of profitability, debt repayment ability, operational ability, and other aspects, providing a basis for investment decision-making and financial risk management. Meanwhile, when conducting comparative analysis, attention should be paid to the selection of benchmark levels, consistency of calculation methods, and the impact of industry differences to ensure the accuracy of the analysis results.

4.3. Financial Risk Analysis

4.3.1. Debt risk analysis

Debt risk analysis mainly focuses on the debt level and solvency of hospitals. By analyzing indicators such as the hospital's asset liability ratio, current ratio, and quick ratio, the hospital's debt risk is evaluated. The asset liability ratio reflects the proportion of borrowing and financing in hospital assets, and reflects the hospital's debt risk; The current ratio and quick ratio respectively reflect the hospital's short-term solvency. Through debt risk analysis, hospitals can understand their own debt situation and provide a basis for financial decision-making and risk management.

4.3.2. Business risk analysis

Business risk analysis mainly focuses on the profitability and ability of hospitals, and evaluates the operational risk of hospitals by analyzing indicators such as net profit margin, return on total assets, and return on investment. The net profit margin reflects the ratio of a hospital's net profit to operating revenue, and is a basic indicator to measure the hospital's profitability; The return on total assets reflects the efficiency of hospital asset utilization, which is the ratio of net profit generated by assets to the average total assets; The return on investment reflects the level of return on hospital

investment projects. Through business risk analysis, hospitals can understand their own profitability and provide a basis for investment decisions and financial risk management.

5. Improvement measures for hospital investment decision-making and financial analysis

5.1 Improve the financial management system

In order to improve the accuracy, scientificity, and effectiveness of hospital investment decisions and financial analysis, it is necessary to establish a dedicated financial management department, equipped with professional financial personnel, to ensure the professionalism and efficiency of financial work. Regularly organize financial personnel to receive business training, improve their professional quality and comprehensive ability, and ensure the accuracy of financial analysis. By regularly monitoring changes in financial indicators, potential financial risks are identified in a timely manner, and corresponding measures are taken to prevent and respond. In the process of financial analysis, modern financial analysis methods should be fully utilized, such as financial statement analysis, financial ratio analysis, financial trend analysis, etc., to improve the accuracy of financial analysis. Improving the transparency of financial information through timely and accurate disclosure of hospital financial information aims to provide accurate financial information for investors, creditors, and other stakeholders. The hospital should strengthen its internal audit work to ensure the accuracy and authenticity of financial data and prevent the occurrence of false financial information. One way to achieve this is by hiring a professional auditing agency to audit the hospital's financial statements. This will help improve the credibility of the financial statements. To improve the accuracy of hospital investment decisions and financial analysis, it is crucial to have a timely understanding of policy trends and industry information. Applying the results of financial analysis to practical work provides strong support for hospital investment decision-making and risk management, among other aspects. To ensure the smooth progress of financial analysis work, it is important to clarify the responsible parties for this task. Assigning specific individuals or departments with the responsibility for financial analysis work will help to ensure accountability and effective coordination.

5.2 Improve the application level of financial analysis methods

In order to improve the accuracy, scientificity, and effectiveness of hospital investment decision-making and financial analysis, it is necessary to enhance the application level of financial analysis methods. Firstly, modern financial analysis methods should be fully utilized, such as financial statement analysis, financial ratio analysis, financial trend analysis, etc., to improve the accuracy of financial analysis. Secondly, it is important to pay attention to the development trends of financial analysis methods, continuously update and optimize them to adapt to the constantly changing financial environment. In addition, it is necessary to strengthen the business training of financial personnel, improve their professional quality and comprehensive ability, and ensure the accuracy and effectiveness of financial analysis methods. Finally, it is necessary to establish a mechanism for applying financial analysis results and apply them to practical work, providing strong support for hospital investment decision-making, risk management, and other aspects. Improving the application level of financial analysis methods can help improve the accuracy, scientificity, and effectiveness of hospital investment decisions and financial analysis, providing strong support for the healthy development of hospitals.

5.3 Strengthen financial risk management

In order to improve the accuracy, scientificity, and effectiveness of hospital investment decisions and financial analysis, it is necessary to strengthen financial risk management. Firstly, a sound financial risk warning mechanism should be established, by regularly monitoring changes in financial indicators, identifying potential financial risks in a timely manner, and taking corresponding measures to prevent and respond. Secondly, it is necessary to strengthen the analysis and management of hospital debt risks, ensure the hospital's debt repayment ability, and reduce debt risks. In addition, it is necessary to strengthen the analysis and management of hospital operational risks, improve the hospital's profitability and risk resistance. Finally, it is necessary to strengthen internal and external audit work, ensure the accuracy and authenticity of financial data, and prevent the occurrence of false financial information.

5.4 Optimize investment decision-making process

In order to improve the accuracy, scientificity, and effectiveness of hospital investment decision-making and financial analysis, it is necessary to optimize the investment decision-making process. Firstly, the goals and principles of investment decision-making should be clearly defined to ensure the scientific and rational nature of investment decision-making. Secondly, it is necessary to fully utilize the results of financial analysis to conduct a comprehensive and in-depth analysis of the economic benefits, risk levels, and other aspects of investment projects, ensuring the accuracy of investment decisions. In addition, it is necessary to strengthen information communication and collaboration in the investment decision-making process to ensure the efficiency and synergy of investment decision-making. Finally, it is necessary to establish a feedback mechanism for investment decisions, track and evaluate the results of investment decisions, continuously optimize the investment decision-making process, and improve the accuracy and effectiveness of investment decisions.

6. Conclusion

The application of hospital investment decision-making and financial analysis methods is of great significance for improving the investment decision-making level and financial analysis ability of hospitals. By improving the financial management system, enhancing the application level of financial analysis methods, strengthening financial risk management, and optimizing investment decision-making processes, hospitals can better utilize financial analysis methods to improve the accuracy, scientificity, and effectiveness of investment decisions. Through these measures, the application of hospital investment decision-making and financial analysis methods will help promote the healthy development of hospitals and contribute to the development of China's medical industry.

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