

Research on the Application of Cash Flow Forecasting Models in Enterprise Investment and Financing Decisions

Chenxu Wang*

Massey University, Palmerston North 4442, New Zealand

**Author to whom correspondence should be addressed.*

Copyright: © 2025 Author(s). This is an open-access article distributed under the terms of the Creative Commons Attribution License (CC BY 4.0), permitting distribution and reproduction in any medium, provided the original work is cited.

Abstract: Cash flow is a core element for enterprises to maintain operations and development. Cash flow forecasting models, through systematic analysis of an enterprise's historical cash flow data, trends in operating activities, and external environmental factors, scientifically predict the scale, direction, and fluctuation of cash flow within a certain period in the future. This article focuses on the application of cash flow forecasting models in enterprise investment and financing decisions, sorts out the types and core functions of the models, analyzes their specific roles in investment project screening, financing plan formulation, risk prevention and control, and fund allocation, points out the existing problems in current applications, and proposes optimization paths. Research shows that the scientific application of cash flow forecasting models can enhance the accuracy and rationality of enterprises' investment and financing decisions, and help enterprises achieve sustainable development.

Keywords: Cash flow forecasting model; Enterprise investment decision-making; Enterprise financing decisions; Capital allocation; Risk prevention and control

Online publication: October 14, 2025

1. Introduction

Investment and financing decisions are at the core of an enterprise's strategy and directly affect its survival, development, and competitiveness. Traditional decision-making relies on experience or a single indicator, is easily influenced by subjective factors, and is difficult to deal with complex risks. Cash flow reflects the actual movement of a company's funds, and its stability determines the feasibility of investment and financing. Cash flow forecasting models, driven by data and featuring dynamic adjustment mechanisms, provide an objective and quantitative basis for decision-making, helping to identify funding gaps, optimize allocation, and avoid risks. In-depth research on its application is of great significance for improving the financial management level of enterprises and enhancing the scientific nature of decision-making.

2. Core types and operating mechanisms of cash flow forecasting models

2.1. The main types of cash flow forecasting models

Cash flow forecasting models can be classified into three categories based on data sources, methods, and scenarios. Trend prediction models take historical cash flow as the core and identify changing trends through time series analysis. They are suitable for enterprises with stable operations and small external fluctuations. The causal prediction model analyzes internal and external driving factors, establishes causal equations for variables, and is suitable for enterprises whose business is closely related to the outside world. The rolling prediction model dynamically updates data, shortens the cycle, and enhances timeliness, making it suitable for enterprises with volatile markets. Enterprises need to select or combine models based on their own characteristics to achieve comprehensive prediction ^[1].

2.2. The operating mechanism of cash flow forecasting models

The operation of a cash flow forecasting model needs to go through four core links: data collection, indicator construction, model operation, and result verification. During the data collection stage, it is necessary to comprehensively collect relevant data on the enterprise's business operations, including detailed historical cash flow, revenue and cost data, information on changes in assets and liabilities, accounts receivable and accounts payable cycle data, as well as external information such as industry development data and macroeconomic indicators, to ensure the completeness and accuracy of the data. During the indicator construction stage, it is necessary to screen key predictive indicators, such as the growth rate of operating cash flow, cash turnover days, and sales cash collection rate, etc., and clarify the logical relationships among the indicators to lay the foundation for model operations ^[2]. In the model operation stage, by applying statistical methods, machine learning algorithms, and other tools, historical data and predictive indicators are substituted into the model to generate the prediction results of future cash flows. At the same time, a fluctuation range is set to reflect the uncertainty of the prediction.

3. Specific applications of cash flow forecasting models in enterprise investment decisions

3.1. Feasibility assessment of investment projects

When enterprises screen investment projects, they need to comprehensively assess the project's income-generating capacity and capital recovery situation. The cash flow prediction model is the core tool for feasibility assessment ^[3]. By predicting the cash inflows and outflows throughout the entire life cycle of an investment project through a model, key data such as the initial investment scale of the project, operating cash flow during the operation period, and residual value recovery at the end of the period can be clearly presented, helping enterprises determine whether the project can achieve net cash inflows. At the same time, based on the prediction results, core evaluation indicators such as net present value, internal rate of return, and payback period of investment are calculated to quantify the profit potential and risk level of the project, avoiding decision-making deviations caused by only focusing on accounting profits while ignoring the time value of funds. For multiple candidate projects, the model can screen out the investment projects that match the enterprise strategy and have the best capital return by comparing the cash flow prediction results and evaluation indicators of different projects, thereby enhancing the scientific nature of investment decisions ^[4].

3.2. Fund planning for investment projects

The implementation of investment projects often requires long-term and continuous capital input. If the capital

planning is unreasonable, it is easy to have a shortage or idleness of funds, which will affect the project progress and the efficiency of capital utilization ^[5]. Cash flow forecasting models provide a basis for enterprises to formulate phased capital investment plans by accurately predicting the capital requirements at each stage of investment projects. For instance, during the project construction phase, the model can predict the time and scale of cash outflows for fixed asset investments such as equipment procurement and engineering construction. During the project operation stage, it is possible to predict operating cash outflows, such as raw material procurement, labor costs, and operating expenses, as well as operating cash inflows, including product sales revenue and service revenue. Based on the prediction results, enterprises can make advanced arrangements for fundraising to ensure that funds are in place in a timely manner at each stage. At the same time, it is necessary to rationally plan the use of idle funds, such as short-term financial investment, to improve the efficiency of fund utilization, reduce capital costs, and ensure the smooth progress of investment projects ^[6].

3.3. Performance monitoring of investment projects

Performance monitoring after the implementation of an investment project is a crucial step to ensure that the project achieves its expected goals. Cash flow prediction models can serve as the core tool for performance monitoring, enabling dynamic tracking and evaluation of the actual operation of the project. By conducting real-time comparisons between the actual cash flow data of the project and the predicted cash flow data, the reasons for the differences are analyzed, such as whether they are caused by changes in the market environment, poor management, or model prediction deviations. If the differences stem from changes in the external environment, enterprises can promptly adjust their business strategies. If the problem stems from the prediction deviation of the model, the model parameters and assumptions can be optimized to enhance the accuracy of subsequent predictions. If it stems from management and operation issues, internal control can be strengthened and operational efficiency improved ^[7]. Through continuous performance monitoring and feedback, enterprises can promptly identify problems in investment projects and take measures to correct them, ensuring that the projects always move towards the expected goals and maximizing investment returns.

4. Specific applications of cash flow forecasting models in corporate financing decisions

4.1. Determination of the scale of financing demand

When enterprises make financing decisions, they first need to clearly define a reasonable scale of financing demand. A financing scale that is too small may not meet the business operation and investment needs of the enterprise, while a scale that is too large will increase financing costs and financial risks. Cash flow forecasting models calculate the company's capital gap or surplus by comprehensively predicting the cash flows from its operating and investment activities within a certain period in the future, thereby determining a reasonable financing scale ^[8]. For instance, the model can predict the operating cash inflows, cash outflows from investment projects, and cash outflows from debt repayment of an enterprise within the next year. By analyzing the difference between cash inflows and outflows, the amount of external financing required by the enterprise can be determined. Meanwhile, the model can take into account the enterprise's demand for safe capital reserves. When calculating the financing scale, it reserves a certain amount of capital buffer space to avoid the breakage of the capital chain due to unexpected situations, ensuring that the financing scale not only meets the actual needs but also avoids idle and wasted funds.

4.2. Selection of financing methods

Enterprise financing methods include various types, such as equity financing, debt financing, financial leasing, and supply chain finance. The costs, risks, terms, and impacts on enterprise control rights of different financing methods vary^[9]. Cash flow forecasting models provide a basis for the selection of financing methods by analyzing the stability, growth trend, and repayment ability of a company's future cash flow. For enterprises with stable future cash flow and strong repayment capacity, priority can be given to debt financing, such as bank loans and bond issuance, to enhance corporate profits through financial leverage without diluting shareholders' control rights. For enterprises with significant cash flow fluctuations and in the growth stage, equity financing can reduce debt repayment pressure and avoid excessive financial risks, making it suitable as the main financing method. For enterprises that need to purchase large-scale equipment, financial leasing can alleviate the pressure of one-time capital expenditure. By paying rent in installments, it can match the cash flow inflow during the equipment usage process and optimize the allocation of funds. Through the simulation and analysis of the cash flow status of enterprises under different financing methods by the model, the most suitable financing method for the current development stage and financial status of the enterprise can be selected^[10].

4.3. Matching of financing terms and control of financing costs

The matching of the financing period with the period of capital demand is the foundation for reducing financing risks and optimizing capital costs, and the cash flow forecasting model is the key tool to achieve this goal. The model helps enterprises precisely match financing terms by predicting the time distribution and duration of capital demands: for short-term demands such as seasonal inventory purchases, it guides the selection of commercial credit, short-term loans, and other methods to avoid the additional costs of long-term financing. For long-term demands such as fixed asset investment, support is provided for the selection of long-term loans, equity financing, and other methods to avoid the risks of the capital chain caused by the maturity of short-term financing and achieve a dynamic balance of terms. Meanwhile, the model can simulate the cash flow expenditures of different financing plans and identify the cost composition and influencing factors. By calculating explicit costs such as loan interest rates and dividend yields, and taking into account implicit costs such as transaction fees and guarantee fees, the actual costs of each plan are comprehensively evaluated^[11]. Based on the prediction results, enterprises can choose the solution with the lowest cost or negotiate the optimization terms. It is also possible to repay high-cost debts in advance based on future cash flow surplus forecasts, further reducing costs and enhancing financial efficiency.

5. Problems and optimization paths in the application of cash flow forecasting models

5.1. Main problems in the application of cash flow forecasting models

At present, when enterprises apply cash flow forecasting models, there are still many problems that restrict the role of the models. Insufficient data quality is the primary issue. The historical cash flow data records of some enterprises are incomplete and inaccurate, and the channels for obtaining external market data and macroeconomic data are limited, resulting in a lack of reliable data support for the model and significant deviations in the prediction results^[12]. The insufficiency of model adaptability is also quite prominent. Many enterprises fail to select the appropriate model type based on their own business characteristics and industry attributes, blindly applying general models while ignoring personalized factors such as business models and cash flow cycles. As a result, the models cannot accurately reflect the actual cash flow situation of the enterprises. The absence of a

dynamic adjustment mechanism for the model also affects the prediction effect. Most enterprises fail to update the parameters and assumptions for a long time after the model is constructed, and thus cannot respond in a timely manner to the impacts brought by changes in the market environment and adjustments in business strategies, resulting in a disconnection between the prediction results and the actual situation ^[13]. In addition, the collaboration between enterprise financial personnel and business personnel is insufficient. Financial personnel lack an in-depth understanding of business processes, and business personnel do not fully participate in the design of model indicators and data provision. This makes it impossible for the model to comprehensively integrate information from the business end, further reducing the prediction accuracy.

5.2. Strategies for improving data quality

Improving data quality is the foundation for optimizing the application of cash flow forecasting models. Enterprises need to establish a complete data management system, standardize the recording standards of historical cash flow data, clarify the scope, frequency, and responsible subjects of data collection, and ensure that cash flow data related to operating activities, investment activities, and financing activities are comprehensively, accurately, and timely entered into the system to avoid data omissions or errors. Strengthen the ability to integrate external data. By connecting with industry databases, macroeconomic information platforms, supplier and customer systems, obtain complete external information such as market demand data, raw material price data, industry competition data, and macroeconomic indicators, and enrich the data sources of the model ^[14]. Establish a data quality review mechanism, regularly verify and clean the collected internal and external data, identify and correct abnormal and duplicate data, and ensure the authenticity and validity of the data. At the same time, data quality evaluation indicators such as data integrity rate, accuracy rate, and timeliness rate are introduced to continuously monitor and improve data quality, providing high-quality data support for the model.

5.3. Model adaptability optimization and collaborative capability building

To optimize the adaptability of the model, it is necessary to combine the operational characteristics of the enterprise, including the business model, cash flow cycle, industry attributes, and development stage, and clarify the core influencing factors to select the appropriate model. Diversified business enterprises can be modeled by sector and then summarized and integrated. For growth-stage enterprises, it is advisable to choose a rolling prediction model to adapt to dynamic changes. At the same time, the best solution can be screened through model testing and comparison of deviations. Regularly evaluate and adjust the model type and indicators to ensure they match actual needs. To ensure the effective application of the model, it is necessary to establish a financial and business collaboration mechanism, break down information barriers, form cross-departmental teams, and clearly define that financial personnel are responsible for model construction and operation, while business personnel participate in indicator design and data verification, promoting the full integration of business information ^[15]. Strengthen personnel training, enhance the data analysis and model optimization capabilities of financial staff, popularize cash flow management knowledge among business personnel, and increase their enthusiasm for participation. Establish a feedback mechanism to encourage all departments to offer opinions on the differences between predictions and actual situations, solve problems in a timely manner, and form a collaborative optimization situation.

6. Conclusion

Cash flow forecasting models are important tools for enterprise financial management and play a crucial role in investment and financing decisions. Scientific application can enhance the efficiency of project evaluation, optimization of financing plans, risk prevention and control, and capital allocation, and promote enterprises to achieve their strategic goals. The problems in the current application need to be solved through data management, model optimization, and collaborative construction. In the future, with the development of technology, models will become more intelligent and dynamic. Enterprises should attach importance to their construction and application, enhance their scientificity and practicality, support decision-making with precise management, strengthen competitiveness, and achieve sustainable development.

Disclosure statement

The author declares no conflict of interest.

References

- [1] Fang Y, 2024, The Role of Optimizing Fund Management in Enterprise Investment and Financing Decisions. *Accounting of Township Enterprises in China*, (16): 61–63.
- [2] Du P, 2024, Risks and Avoidance Strategies of Enterprise Investment and Financing. *Investment and Cooperation*, (08): 41–43.
- [3] Chen Z, 2024, Exploration of Key Points of Cash Flow Management in Private Enterprises. *Sales & Management*, (24): 66–68.
- [4] Lu S, 2024, Analysis of the Management and Control of Small and Micro Enterprises from the Perspective of Investment and Financing. *Modern Audit and Accounting*, (06): 43–45.
- [5] He J, 2024, Risk Assessment and Preventive Measures in Investment and Financing Decisions. *Guangdong Economics*, (11): 73–75.
- [6] Chen Y, 2024, A Brief Analysis of the Impact of Cash Flow Management on the Stability of Business Operations. *Modern Business Research*, (11): 56–58.
- [7] Wang T, 2023, Discussion on Enterprise Cash Flow Management under Internet Finance Model. *Wealth Management*, (11): 38–39 + 42.
- [8] Zheng Y, Wu S, 2023, Research on Bond Default Early Warning Models Based on Financial and Non-Financial Information: Empirical Analysis and Application of Fisher Model and Logistic Model. *Finance and Accounting Monthly*, 44(12): 22–29.
- [9] Research Group of Investment and Financing Professional Committee of China Construction Accounting Society, Ma Y, Qu X, et al., 2023, Research on the Evaluation System of Investment and Financing Capacity in the Engineering Construction Industry. *Architecture*, (02): 48–56.
- [10] Ma Y, Qu X, 2023, Industry Investment and Financing Development Practice and Innovative Exploration. *Construction Enterprise Management*, (02): 68–70.
- [11] Jiang M, 2022, Analysis of Free Cash Flow and Enterprise Value Evaluation. *Business Culture*, (05): 84–85.
- [12] Wen S, Chai M, 2021, Discounted Cash Flow Method: Interpretation and Application Cases. *Friends of Accounting*, (09): 149–155.
- [13] Qiu S, Yang Q, 2020, Research on the Value of Listed Companies Based on Discounted Free Cash Flow Model: A

Case Study of ZTE Corporation. *National Circulation Economy*, (25): 76–79.

- [14] Tang X, Chen C, Xu R, 2020, Analyst Revision Behavior, Cash Flow Forecast and Investor Response: A Study from the Perspective of Unexpected Earnings. *Friends of Accounting*, (12): 13–21.
- [15] Li C, 2020, Research on the Construction of China's Treasury Cash Flow Forecasting System: Macro Thinking and Practical Exploration. *Economic Research Reference*, (03): 39–59.

Publisher's note

Bio-Byword Scientific Publishing remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.