Research on Enterprise Financial Informationization Construction and Optimization of Intelligent Financial Management System

Zhong Wang

Wuhan College of Arts and Science, Wuhan, 430000, Hubei, China

Abstract: In the current context of rapid development of digital economy, enterprise financial management is facing increasingly complex internal and external environments, and the traditional financial management model has been difficult to meet the needs of intelligence, refinement and efficiency. This paper analyzes the status quo and development trend of enterprise financial informatization construction, and clarifies the important role of informatization in improving the efficiency of financial management; from the three dimensions of data-driven decision-making support, financial process optimization based on artificial intelligence, and the deep integration of informatization and intelligence, it discusses the key elements of the optimization of the intelligent financial management system and the path of achieving it; finally, it evaluates the effect of optimized intelligent financial management system through a typical case, and verifies that it can meet the demand of intelligent financial management and improve its efficiency. Finally, the optimized intelligent financial management system is evaluated through typical cases to verify its significant role in improving management efficiency, reducing operating costs and enhancing decision-making science. The study shows that promoting the organic combination of informationization construction and intelligent management can not only improve the overall level of enterprise financial management, but also provide an important guarantee for enterprises to achieve sustainable development.

1. Introduction

With the vigorous development of digital economy, the external business environment and internal management needs of enterprises have undergone profound changes, and financial management, as an important part of enterprise operation, is facing unprecedented challenges[1]. On the one hand, the intensification of market competition and the complexity of the policy environment require financial management to be more agile and scientific; on the other hand, the explosive growth of the volume of enterprise data has driven the widespread application of information technology in the financial field, thus accelerating the process of financial informatization and intelligent change[2].

Financial informatization construction has made significant progress in data integration, process

automation, real-time analysis and other aspects, laying a solid foundation for the construction of intelligent financial management system[3]. At present, the financial management system of many enterprises is still characterized by data silos, process rigidity and insufficient intelligence, which restricts the further enhancement of financial management effectiveness[4]. Therefore, how to optimize the construction of information technology and the introduction of intelligent technology to achieve the innovation of the financial management model and improve efficiency has become a key issue that enterprises need to be resolved.

The purpose of this paper is to study the theoretical and practical path of enterprise financial informatization construction and intelligent financial management system optimization[5]. It comprehends the status quo and trend of enterprise finance informatization construction, and clarifies its value in financial management; it explores the core elements of intelligent financial management system optimization, including data-driven decision-making, the application of artificial intelligence in financial processes, and the deep fusion of informatization and intelligence; and finally, it verifies the practical effects of optimization measures through case studies and discusses the challenges and coping strategies faced[6]. It is hoped that this study can provide theoretical support and practical reference for enterprises to build an efficient and intelligent financial management system.

2. Analysis of the status quo and trend of enterprise finance informatization construction

Driven by the wave of global digital transformation, enterprise financial management is gradually changing from the traditional mode to the direction of informationization[7]. Financial informatization is based on modern information technology and provides efficient and accurate financial information support for enterprises by realizing the collection, processing, storage and analysis of financial data[8]. This not only enhances the transparency and efficiency of the internal management of the enterprise, but also strengthens the enterprise's resilience in the rapidly changing market environment. Therefore, financial informatization has become an important strategic tool for enterprises to enhance their core competitiveness, showed in Figure 1:
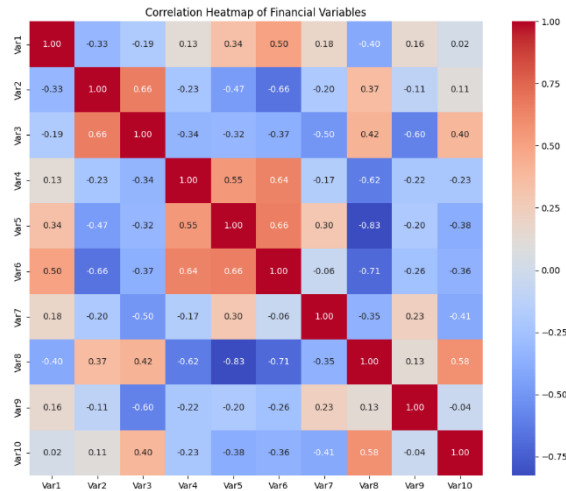

Figure 1 Correlation Heatmap of Financial Variables

Progress has been made in the construction of enterprise financial informationization, covering core business areas such as accounting, budget management and fund management. Some large enterprises have introduced ERP (Enterprise Resource Planning) systems, which have broken the traditional isolation of business and finance by integrating different business modules. For small and medium-sized enterprises (SMEs), the depth and breadth of financial informatization still needs to be improved due to the limitations of resources and technical capabilities, and some enterprises still rely

on manual or low-level informatization tools for financial management. Return on Investment (ROI):

$$ROI = \frac{\text{Net Profit}}{\text{Total Investment}} \times 100\% \tag{1}$$

Present Value (PV) Formula:

$$PV = \frac{C}{(1+r)^n} \tag{2}$$

From the technical level, the rapid development of technologies such as big data, cloud computing and artificial intelligence has injected new vitality into enterprise financial informatization[9]. The application of these technologies not only optimizes the processing capacity of financial data, but also improves the depth and real-time nature of data analysis, promoting the development of intelligent financial management[10]. The popularization of mobile Internet technology has led to the gradual transformation of enterprise financial management to mobile and real-time, providing managers with more flexible means of decision support.

The construction of enterprise financial informationization will pay more attention to the development direction of intelligence and automation[11]. By further integrating emerging technologies and building a data-driven intelligent financial management system, it will realize comprehensive insight and dynamic management of the enterprise's financial situation[12]. This not only helps to improve the operational efficiency of enterprises, but also promotes the transformation of enterprise financial management from a supportive function to a strategic function, and helps enterprises gain a sustainable advantage in competition.

3. Key elements and realization path of intelligent financial management system optimization

The optimization of intelligent financial management system needs to focus on three core dimensions: data, technology and management mechanism. On the one hand, data-driven decision support provides scientific management basis for enterprises through deep mining and real-time analysis of massive financial data; the introduction of artificial intelligence technology can optimize the financial process, improve efficiency and accuracy; the deep integration of information technology and intelligence not only requires the support of advanced technology, but also relies on systematic adjustments to the management mechanism, in order to achieve the overall intelligence and efficiency of financial management.

3.1 Data-driven financial decision support

With the rapid development of big data technology, data has become an important asset for enterprise financial management. Through the comprehensive collection and integration of internal and external data, financial management can get rid of the traditional mode of relying on empirical decision-making and shift to scientific and intelligent decision-making based on data. This data-based financial decision support can not only improve the management efficiency of enterprises, but also enhance their competitiveness in the market. Break-Even Point:

$$Q = \frac{F}{P-V} \tag{3}$$

Q = Break-even quantity
F = Fixed costs
P = Price per unit
V = Variable cost per unit

Integrated data management provides a complete and consistent source of information for financial decision-making. Through the Enterprise Resource Planning (ERP) system (ERP) or other

information technology tools, financial data and business data can be seamlessly integrated to eliminate the problem of data silos. This integration not only improves the credibility and consistency of data, but also provides a global perspective for top decision makers, making it easier for them to respond quickly in a complex and changing environment.

The improvement of real-time analysis capability enables financial management to quickly identify potential problems and formulate corresponding countermeasures. With the help of big data analytics, enterprises can dynamically monitor financial data and forecast trends to identify risk points in operations. Through real-time analysis of capital flows, cost changes and revenue structures, companies can make early adjustments to budgets and resource allocation to reduce financial risks and optimize profitability, showed in Figure 2:
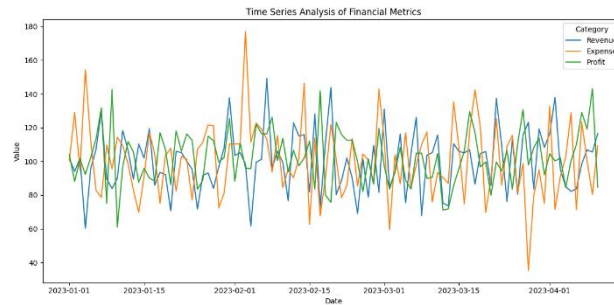

Figure 2 Time Series Analysis of Financial Metrics

Data-driven decision-making also supports a more refined financial management model. Through machine learning algorithms trained and modeled on historical data, companies can build accurate financial forecasting models to provide quantitative support for sales forecasting, cash flow management, investment decisions, and so on. This kind of decision-making based on data analysis not only reduces the bias of human subjective judgment, but also improves the science and reliability of financial management, laying a solid foundation for enterprises to achieve their strategic goals.

3.2 Artificial Intelligence-based Financial Process Optimization

The rapid development of artificial intelligence technology provides strong technical support for financial process optimization. Through the introduction of artificial intelligence, enterprises can carry out intelligent transformation of traditional financial processes, thereby significantly improving work efficiency, reducing operating costs, and realizing more accurate financial management. This change is not only reflected in the automation of a single task, but also in the construction of a highly collaborative and adaptive intelligent financial management system. Compound Annual Growth Rate (CAGR):

$$CAGR = \left(\frac{FV}{PV}\right)^{\frac{1}{n}} - 1 \tag{4}$$

The application of artificial intelligence in data processing significantly improves the efficiency of financial processes. Traditional financial data processing relies on manual operations, which are less efficient and prone to errors, while automated tools based on artificial intelligence can quickly complete tedious tasks such as data entry, checking and classification. Optical Character Recognition (OCR) technology can quickly digitize paper bills and automatically enter them into the system, thus significantly shortening data processing time and reducing human error, showd in Figure 3 :
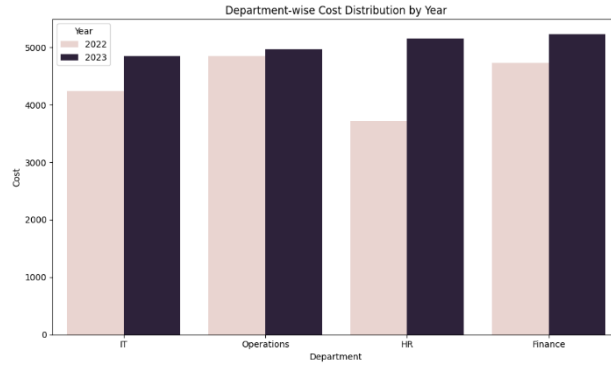
Figure 3 Department-wise Cost Distribution by Year

The application of artificial intelligence in anomaly detection effectively reduces financial risks. Through machine learning algorithms trained on the historical financial data of an enterprise, the intelligent system is able to recognize abnormal patterns and provide real-time warnings. In the auditing process, artificial intelligence algorithms can quickly detect transaction records or financial anomalies that do not conform to the pattern, thus improving auditing efficiency and reducing the risk of financial fraud. This active prevention and control mechanism builds a more reliable financial management system for enterprises.

Artificial intelligence also plays an important role in forecasting and decision support. Through natural language processing (NLP) technology and intelligent analysis tools, enterprises can conduct deep mining and intelligent interpretation of financial data to generate more accurate forecast reports. In budgeting, AI can automatically generate dynamic budget programs based on historical data and market trends, providing enterprises with a more scientific basis for resource allocation.

Artificial intelligence promotes the full automation and intelligent integration of financial processes. The intelligent financial system based on RPA (Robotic Process Automation) can realize the automation of the whole process from data collection, report generation to performance analysis, and realize the integrated management of finance and business through deep integration with other business systems. This efficient and collaborative process optimization model creates significant value for the enterprise and lays the foundation for the further development of the intelligent financial management system.

3.3 Management Mechanism for Deep Integration of Informatization and Intelligence

The in-depth integration of informationization and intelligence is an important driving force for enterprise financial management to move towards comprehensive intelligence, and is also a key link to enhance the efficiency and competitiveness of the financial management system. This integration not only requires innovation at the technical level, but also requires systematic adjustment of the management mechanism to ensure that the application of technology can truly serve the strategic objectives of the enterprise and continue to create value. Net Present Value (NPV):

$$NPV = \sum_{t=0}^{n} \frac{C_t}{(1+r)^t} - C_0 \qquad (5)$$

The integration of informatization and intelligence requires the support of a management mechanism centered on data governance. A good data governance system can ensure the accuracy, consistency and security of financial data, thus providing a high-quality data base for intelligent applications. The establishment of a standardized data management process and access rights control mechanism can not only eliminate the problem of data silos, but also provide reliable data security for the development and deployment of intelligent tools, showed in Figure 4 :
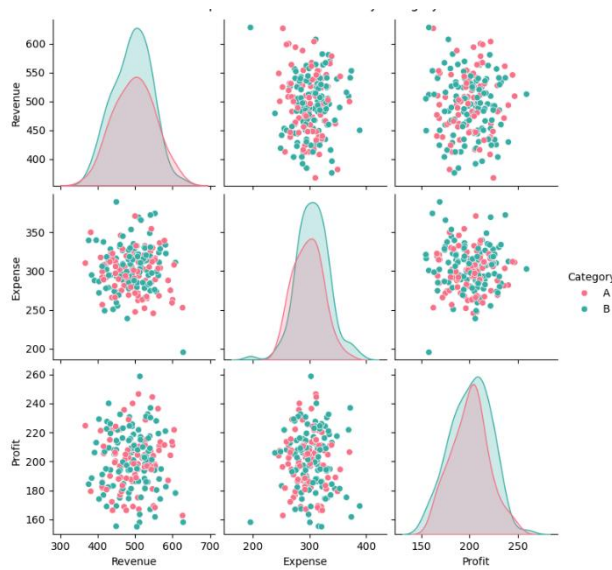
Figure 4 Pairplot of Financial Metrics by Category

The integration process needs to focus on the adaptive adjustment of organizational structure and business processes. The deep integration of information technology and intelligence often impacts the traditional financial management model of enterprises, so it is necessary to break down interdepartmental barriers and promote the efficient flow of information and resources by optimizing the organizational structure and reshaping business processes. The introduction of cross-functional financial shared service centers can centralize repetitive work and achieve resource integration and process optimization, thus enhancing management efficiency.

Integration also requires the establishment of a people-oriented intelligent talent management mechanism. The application of technology cannot be separated from the support of high-quality professionals, so enterprises should focus on cultivating composite talents with both financial and technical capabilities, and stimulate the innovation ability of employees in intelligent financial management by formulating a reasonable incentive mechanism. Through the combination of internal training, external learning and practice, to enhance the understanding and application of intelligent systems, to ensure the seamless integration of technology and management.

The in-depth integration of information technology and intelligence also needs to be supported by the transformation of enterprise culture and management concepts. In the integration process, enterprises need to create an open and inclusive innovation culture and encourage employees to accept and actively explore the application of new technologies. Senior managers should play a leading role, by clarifying the strategic direction and goals of intelligent financial management, promote the entire staff to reach a consensus in the ideology, and jointly contribute to the intelligent transformation of enterprise financial management.

4. Case and Effectiveness Evaluation of Intelligent Financial Management System Optimization

The optimization practice of intelligent financial management system has achieved remarkable results in many enterprises, and the analysis of specific cases can provide insight into its actual application effect. Take a large manufacturing enterprise as an example, the enterprise in the financial management introduced intelligent financial system, through the combination of information technology and intelligent technology, successfully realized the automation and intelligence of the financial process, thus significantly improving the financial management

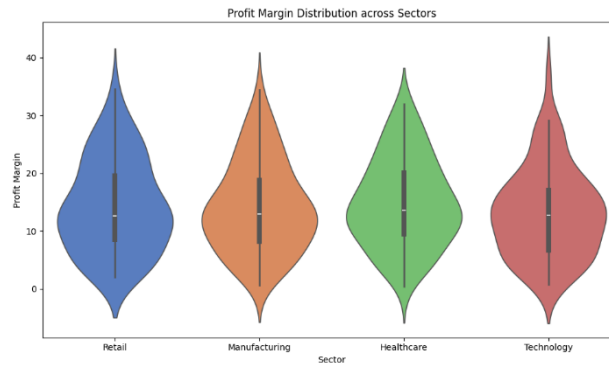efficiency and decision-making quality, showed in Figure 5 :

Figure 5 Profit Margin Distribution across Sectors

The enterprise has established a dynamic financial monitoring system through the introduction of artificial intelligence and big data analysis technology to deeply mine and analyze financial data in real time. In the process, the enterprise is able to monitor the flow of funds, cost changes and recovery of accounts receivable in real time, and take timely measures to make adjustments when anomalies are detected. This data-driven management approach not only improves financial transparency, but also enhances management's decision-making responsiveness. Cost-Volume-Profit (CVP) Analysis :

$$Profit = (P \times Q) - (F + V \times Q) \tag{6}$$

Enterprises have introduced Robotic Process Automation (RPA) technology into their financial processes, replacing manual labor with automated tools to complete a large number of repetitive tasks, such as data entry, invoice reconciliation and financial statement generation. This effectively reduces human errors, improves operational efficiency and saves a lot of human resources. Robotic automation technology also enables finance staff to focus more on value-added tasks such as analysis and decision-making, thus improving overall financial management.

The implementation of an intelligent financial management system is not without challenges. In the initial stages, the integration of the system and the adaptation process of the staff face certain difficulties. In particular, the transformation of the old financial system and the learning curve of the staff to the new technology required investment of time and resources. Nonetheless, through systematic training and gradual transition, the enterprise eventually succeeded in overcoming these challenges and achieving a smooth transition to financial informatization.

Through the evaluation of the effect of the enterprise after the implementation of intelligent financial management system, it can be found that the deep integration of financial informationization and intelligence greatly improves the scientificity and accuracy of financial decision-making. In terms of cost control, budget management and fund scheduling, the enterprise has realized more refined and efficient management, and the financial transparency has been greatly improved. The application of intelligent financial system not only reduces the labor cost of financial management, but also creates the advantage of sustainable development for the enterprise and promotes the transformation of the enterprise to a more efficient and intelligent financial management mode.

5. Conclusion

With the continuous progress of information technology, the optimization of intelligent financial management system has brought great changes to enterprises. Through data-driven decision support,

the application of artificial intelligence in the financial process, and the management mechanism of the deep integration of information technology and intelligence, enterprises are not only able to improve the efficiency of financial management, but also better cope with the uncertainty and changes in the market. In the process of realizing financial automation and intelligence, enterprises have gained higher transparency and decision-making accuracy, providing strong support for corporate strategic decision-making.

The optimization process of intelligent financial management system also faces challenges in technology integration, personnel adaptation and management innovation. Therefore, when promoting intelligent financial management, enterprises should pay attention to the gradual introduction of technology, personnel training and management mode innovation to ensure the continuous optimization and steady improvement of the financial system.

With the continuous development of artificial intelligence, big data, cloud computing and other technologies, intelligent financial management will further penetrate into all levels of the enterprise to realize a more efficient and refined financial management model. Enterprises should continue to pay attention to the construction and application of intelligent financial management system, through continuous optimization of the financial management process, enhance the efficiency of data utilization, to provide a solid guarantee for the realization of sustainable development and improve core competitiveness.

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