Innovative Management Strategies for Corporate Financial Risks in the Big Data Era

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Abstract: *The capability of financial risk management directly impacts a company's competitiveness. Financial risks such as financing risks and investment risks inevitably exist during corporate operations. Financial risk control affects resource integration capabilities and may even lead to corporate bankruptcy, making it crucial for enterprises to strengthen financial risk management. Big data technology provides new approaches for financial risk management. This paper analyzes the current financial risk management status of Du Technology Co., Ltd., identifies existing issues through financial indicators, and proposes innovative management strategies for corporate financial risks in the big data era. These strategies include enhancing internal controls, improving internal auditing, establishing financial risk early-warning mechanisms, and promoting financial personnel transformation, aiming to strengthen operational stability.*

Keywords: *Big Data; Corporate Financial Risk; Innovative Management*

Under the context of building a high-quality development framework, enterprises face higher requirements for management capabilities. With increasingly sophisticated market mechanisms and deepening openness, intensified market competition demands higher standards for financial management. The application of information technology presents new opportunities for accounting transformation. Enterprises inevitably face potential financial risks during operations, particularly exacerbated by cross-industry competition. Excessive financial risks can undermine long-term development, necessitating strengthened financial risk control systems. Utilizing data analytics to establish comprehensive financial risk management mechanisms enables multidimensional risk analysis. This facilitates early warning of financial risks and enhances corporate risk response capabilities, thereby improving market competitiveness in the context of financial informatization.

1. Current Research Status at Home and Abroad

Arthur Williams proposed five elements of financial risk management in 1995: identification of corporate risks, assessment of risk uncertainties, risk management control, risk financing, and risk management feedback. Foreign scholars have developed corresponding pricing models for different financial risks, such as the Black-Scholes model, and a series of risk measurement models including Value at Risk (VaR) and Risk Exposure models. [7] Odom (1990) applied artificial neural networks to corporate financial risk management using multivariate logistic regression models. [8] Ashbaugh (2008)

argued that inadequate internal controls increase the probability of corporate errors, thereby elevating financial risks. Information-based financial risk management has become a focal point in Western research, with practical achievements being widely applied in financial risk management and accumulating substantial practical experience. Over 70% of foreign financial professionals are management accountants, driving the establishment of financial shared service centers and promoting business-finance integration. They utilize information tools to deeply explore data correlations and construct multidimensional financial risk models under financial sharing centers.

From the 1980s to 1990s, Chinese scholars began researching financial risk control. Jin Qi and Li Lin (2011) analyzed the definition of financial risks and risk management procedures. Wang Dongmei and Wang Xu examined the causes of financial risks and prevention strategies. Wang Donghong and Liu Jinlin (2017) studied the role of internal controls in financial risk management. Wang Yixin, Yun Feifei, and Cheng Suao analyzed financial risk control from the perspective of financing processes. [4] Zhao Jin'ge explored challenges in corporate financial risk management under digital transformation, including staff competency, internal controls, and financial information security. Wu Di (2022) established a financial risk management indicator system encompassing solvency risk, investment risk, financing risk, and operational risk.

2. Related theories of financial risk control

Financial risk control can usually be divided into multiple stages such as financial risk assessment, financial risk identification, financial risk control, and post monitoring of financial risks, involving multiple theories such as financial risk warning and internal control. The financial risk control chart shown in Figure 1 below

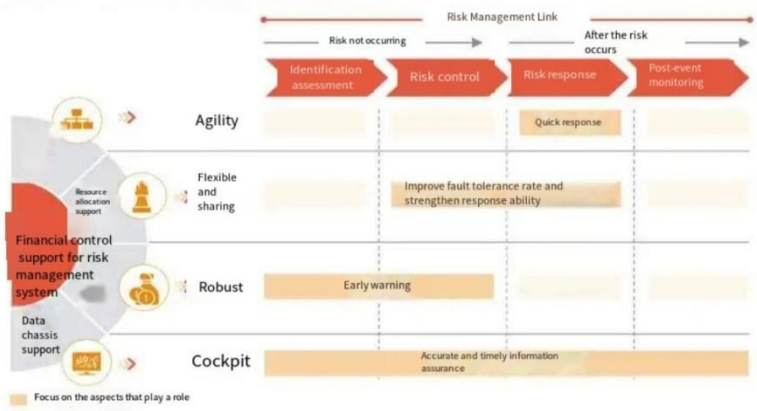

Figure 1 Financial Risk Control Process Diagram

（1） Financial risk warning

Financial risk warning refers to the establishment of relevant warning mechanisms to prevent the occurrence of financial risks in enterprises, which can provide early warning of financial risks. When the financial risks of enterprises reach or exceed a certain standard, timely warning should be given and necessary measures should be taken to intervene to prevent the real occurrence of financial risks. To ensure the financial security and stability of the enterprise, guarantee its normal operation, and provide effective risk information and decision support for enterprise decision-makers.

（2） Internal Control Theory

Internal control is generally considered to be accompanied by the separation of ownership and

management rights, as opposed to external control. In order to promote the standardization of enterprise management and establish a scientific system to regulate and constrain organizational members, in order to achieve organizational goals. It is generally believed that internal control includes five elements, namely internal control environment, risk assessment, control activities, information and communication, and internal control evaluation, all of which are indispensable. These elements are interrelated and interact with each other to form a dynamic and continuously improving internal control framework, providing a solid guarantee for the stable operation and sustainable development of the enterprise.

3. Strategies for Financial Risk Management in Enterprises under the Background of Big Data

（1） Enhance budget management and strengthen cost control

Under the background of big data, it is necessary to promote the informationization construction of enterprises, build an informationization data sharing platform as shown in Figure 2, promote the unity of pre event, during event, and post event, and quickly input enterprise business information into the platform system to promote information sharing. Once again, we should promote the data transformation of enterprises, finance, budgeting, human resource management systems, and budget management. This can provide support for front-end business and guidance for subsequent business. By relying on the enterprise data information platform, we can promote the integration of financial data, business data, and enterprise budget management, construct qualitative and quantitative budget management indicators, formulate comprehensive budget goals, consider the actual situation of different departments' work, promote the decomposition and implementation of budget goals, and promote the unity of budget goals and departmental resource coordination. Through the application of big data technology, we can construct various forms of budget models, improve the quality of data budgeting, and lay a good foundation for enhancing the scientificity of budgeting. We should change the traditional methods of floating budget calculation or general accounting budget management, and adopt more scientific budget accounting methods. If necessary, we can use rolling budget accounting methods. Combining the execution status of budget management objectives with the budget cycle, it is necessary to consider both the completion status of the budget in a previous period of time and the current budget execution status of the enterprise. At the same time, it is also necessary to consider the budget target situation in the future period of the enterprise. By using the execution status of the budget target in the previous period, the budget management work can be cleared daily or regularly, reducing the accumulation of work.

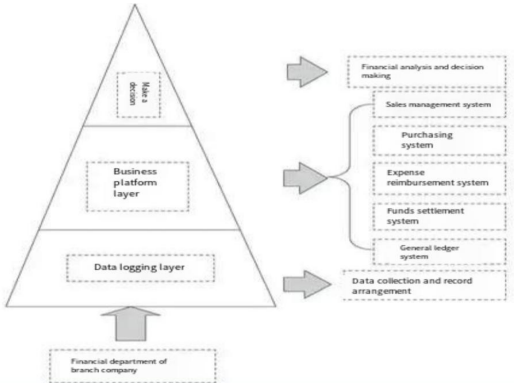

Figure 2 Structure of Enterprise Financial Shared Center

（2） Establish a real-time financial risk warning system

The financial risk warning system under the background of big data informatization can further analyze risks, enhance the completeness of risks, and lay a good foundation for further improving the quality of risk control. Therefore, big data should be used to select scientific evaluation indicators, enhance the comprehensiveness of evaluation, construct diverse financial risk analysis models, test the applicability of the models, and strengthen the financial risk warning system through the models. The methods of financial risk analysis are usually divided into qualitative analysis and quantitative analysis, and quantitative analysis methods are further divided into single indicator method and multiple indicator analysis method, such as the balanced scorecard method. Qualitative analysis is easily influenced by personal subjective factors, while quantitative analysis is also affected by the selection of unreasonable data or indicators, which can affect the results of the analysis. Therefore, careful consideration is needed when formulating analysis indicators. By using the Analytic Hierarchy Process and Fuzzy Comprehensive Evaluation Analysis method to construct a diversified enterprise financial risk warning mechanism, it is possible to build a financial risk analysis model for multiple dimensions such as debt paying ability, profitability, operational ability, and development ability of the enterprise, enhance the comprehensiveness of enterprise financial risk analysis, establish standards for various indicators, strengthen the warning of financial risks, promote the advancement of financial risk control, and promote the integration of financial and business work. As shown in Figure 3, the application of data information systems promotes the unity of financial risk assessment before, during, and after the event, enhances the scientificity of financial risk assessment, and lays a good foundation for improving the quality of enterprise financial risk. We should strengthen the application of financial risk warning systems, and use them to apply the actual data of enterprises to the construction process of evaluation systems. Through the application of evaluation systems, we can enhance the scientificity of risk assessment, strengthen the functions of evaluation systems, and lay a good foundation for improving the application of risk assessment systems.

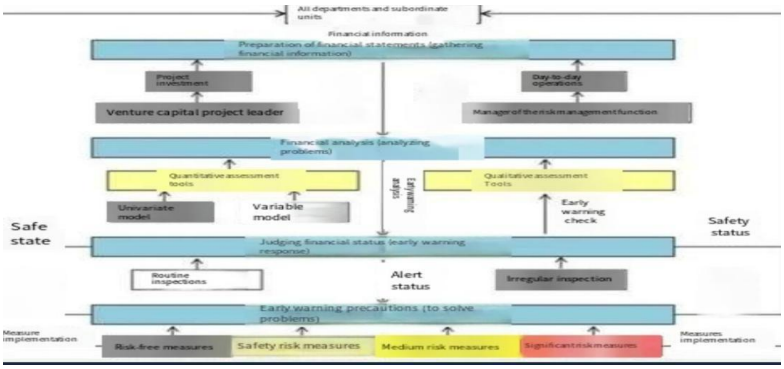

Figure 3 Financial Risk Warning Chart

（3） Improve the audit supervision mechanism

Big data, as an auditing tool, can only truly play its role when combined with auditing procedures. The data for big data auditing mostly comes from financial shared centers, so when conducting auditing work, it is necessary to analyze the data, identify audit doubts, and seek audit evidence. When conducting data analysis, it is necessary to evaluate the internal control environment, internal control processes, internal control communication and exchange related to the audit system, electronic vouchers or archives of the financial shared center, in order to enhance the reference value of the data.

At the same time, an evaluation should be conducted on the financial shared center system and other systems, such as production management systems or customer management systems, to identify any suspicious issues in the audit. When analyzing data, it can fully promote data mining, further analyze the collected audit related data, discover some deep or hidden problems in the audit process, in order to further find the doubts in the audit data. On the other hand, based on the relationship between the financial sharing system, production management system, and supply chain management system, we should further explore the deep connections between financial and business data, business and business data, and financial and financial data. We should analyze the deficiencies in financial and business data, identify audit doubts, and further discover problems in audit services. In the process of data analysis, in addition to using data mining methods to discover audit doubts, attention should also be paid to multi-dimensional analysis of data during the audit process, that is, analyzing data from multiple dimensions through the relationship between data structures. This can not only quickly discover audit doubts, but also use the multi-dimensional analysis process as audit evidence to support the achievement of audit objectives. At the same time, SQL queries can be used, which include data insertion, query, update, and deletion, database schema creation and modification, and data access control. As shown in Figure 4

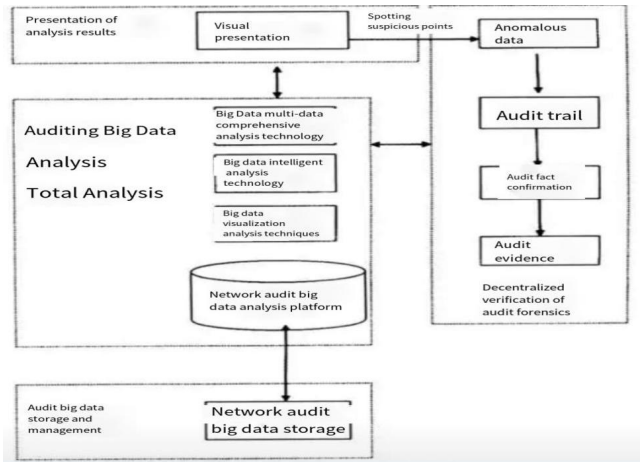

Figure 4 Audit Process under the Background of Big Data

Due to the support provided by the financial shared management system for enterprise decision-making, it will contain a large number of structured databases. SQL queries can be used to perform association queries or fuzzy queries between multiple tables, thereby discovering problems that arise during the audit process and determining audit doubts. The purpose of data analysis is to quickly identify audit doubts, and once the audit doubts are determined, the collection of audit evidence should be carried out to promote the achievement of audit objectives. In the process of big data auditing, attention should be paid to the role of intermediate tables. The intermediate table plays an important role in transforming audit doubts into audit evidence. In reality, in order to find audit evidence, multi-level intermediate tables may be established. Therefore, auditors should conduct analysis based on audit risks, establish various audit models, strengthen data analysis, highlight the rigor of auditing, objectively seek audit evidence, and prevent duplicate audit risks.

4. Conclusion:

Under the background of data informatization, enterprise financial management faces more challenges and opportunities. Therefore, in the process of enterprise financial management, it is

necessary to further strengthen the control of financial risks, expand enterprise data resources through big data systems, improve the quality of financial management, and use big data technology to build a financial budget management system, construct financial risk warning, enhance audit supervision, etc., in order to improve the quality of financial risk management. In addition, it is necessary to pay attention to data security, establish a sound data protection mechanism, ensure the security and reliability of financial information, and provide solid guarantees for the stable development of enterprises.

reference:

[1] Zhao Jinge Research on Identification Methods of Enterprise Financial Risks [J]. Enterprise Economics, 2021 (23): 35-36

[2] Wu Di Research on Financial Risk Management Issues in Commercial Banks: A Case Study of Bank A. China Forestry Economy, 2022 (01): 15-16

[3]ArthurWilliams.Capital budgeting decision-making practices:evidence from Pakistan[J].Journal of Advances in Management Research,1995,issue 2(16):142-167.

[4]ODON:A Hidden Risk for FiscalStability[R].The World Bank,1990.

[5]Ashbaugh.Opportunities For Improvementof The FinancialManagementand Control Systemin The Budgetary Organizations[J].EconomicScience,education and the real economy:Development and interactions inthe digital age,2008.

[6] Wang Lu, Zheng Yuanfang The principle and risk research of financial leverage [J]. Market Weekly (Theoretical Research), 2017 (04): 35-36

[7] Li Xin, Li Xiaotong Construction of Enterprise Internal Control System Based on Financial Risk Management [J]. Accountant, 2021 (19): 25-26