

Research on the Inner Logic and Practical Path of Empowering Enterprise Financial Intelligence Construction with Digital Economy

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Abstract: In recent years, with the rapid development of digital information technology, the digital economy has emerged as a powerful driver of economic growth. Against this backdrop, enterprises have embarked on new explorations of business-finance integration, promoting the transformation and development of financial functions. Drawing on theories such as principal-agent theory, information asymmetry theory, signaling theory, and internal control theory, this study examines the impact of business-finance integration on enterprise risks (including operational and financial risks) from a micro-perspective. It also delves into the impact pathways and mechanisms. The findings reveal that business-finance integration can significantly reduce both operational and financial risks for enterprises. This is achieved by enhancing the quality of accounting information and internal control, optimizing business decisions, improving capital utilization and resource allocation efficiency, and strengthening internal oversight effectiveness, thereby reasonably avoiding and mitigating risks. Notably, the inhibitory effect of business-finance integration on risks is more pronounced in high-tech enterprises and those facing higher financing constraints. Therefore, enterprises should increase investments in digital technology, improve relevant systems, and cultivate interdisciplinary talents to facilitate the effective implementation of business-finance integration. However, current methods for measuring business-finance integration suffer from measurement biases, suggesting a need for further exploration in future research.

1. Introduction

In the context of the digital economy, the intelligent construction of enterprise finance and the

integration of business and finance have become the core strategies to promote enterprise transformation and upgrading, and enhance competitiveness. The rapid development of digital information technology has not only spurred the rise of the digital economy, but also profoundly changed the internal organizational structure and information integration and communication methods in business activities of enterprises. The integration of business and finance in the context of the digital economy aims to achieve the organic integration of information flow, business flow, and capital flow through the support of information technology, thereby maximizing the overall value of the enterprise. The finance department and business department collaborate based on a common value goal, utilizing advanced technologies such as big data and artificial intelligence to obtain real-time market data, strengthen the information supply of the accounting system, and improve the efficiency of information capture, analysis, and sharing. Enterprises need to better integrate business and financial management, and establish an efficient and coordinated work model. We need to optimize those business processes and internal controls to ensure smooth operations and secure funding. Data security and privacy protection also need to be strengthened, and a reliable data protection mechanism must be established to safeguard financial intelligence and commercial financial integration. Enterprises can better cope with the challenges and opportunities of the digital economy era, develop steadily, and stand out in the market!

2. Correlation Theory

In the field of digital economy, there are many studies exploring how to use emerging technologies to promote the intelligence of enterprise finance and better integrate business and finance. Researchers have come up with a series of innovative theoretical frameworks and practical methods to build a solid theoretical foundation and technological support for the intelligentization of corporate finance. They conducted in-depth research on how to measure the value of information and proposed a novel framework called "data component" to help companies better explore and utilize the information wealth in the digital economy. These frameworks provide important theoretical support for financial intelligence in enterprises, making financial decisions more scientific and accurate. Also, researchers have been pondering how to optimize data processing techniques. They have utilized advanced technologies such as high-performance computing, artificial intelligence algorithms, and machine learning to rapidly process and analyze massive amounts of data, providing strong technical support for financial intelligence. In this way, the speed and efficiency of data processing have increased, and enterprises can obtain more and deeper data insights and decision-making basis. Researchers also pay special attention to financial risk warning and fraud detection. They have designed a user-friendly financial risk warning system and fraud detection mechanism using advanced algorithms and models, allowing enterprises to receive risk warnings in a timely and accurate manner and have response plans. Once these research results are applied, the risk management capabilities of enterprises are improved, and financial security is also more guaranteed. Furthermore, they conducted in-depth research on platform based organizations from the perspective of digital governance. The researchers carefully analyzed the internal logic and governance effectiveness of these organizations, providing theoretical guidance and practical references for enterprises on how to build efficient and collaborative organizational structures. Overall, these research results not only provide technical support and risk management tools for enterprises, but also provide important references and inspirations for the transformation and upgrading of enterprises in the digital economy era.

3. Method

3.1. The Impact of Business-Finance Integration

In business operations, risks and rewards coexist. By reasonably reducing risks, enterprises can achieve maximum value while reducing risks. The integration of commercial finance, as an emerging management model in the digital economy, is crucial for addressing operational risks. It has improved management efficiency, optimized financial models, integrated business and financial processes, and laid a solid foundation for its implementation. By analyzing the business essence behind financial data, providing more effective information for managers and departments, improving communication efficiency, unifying data statistics, accelerating information flow, helping departments cope with potential operational risks, and thereby reducing overall operational risks. The integration of enterprise financing also plays a crucial role in financial risks, including narrow debt financing risks and broad risks that run through the entire financial activity. It alleviates financing constraints by reducing information asymmetry, improving accounting information quality, and enhancing internal controls, which helps optimize capital structure decisions and reduce financial risks. It shortens the distance of information transmission, enables timely financial analysis of business information, improves risk management, supports effective investment and financing decisions, optimizes resource allocation, enhances internal control environment, and thus reduces financial risks.

3.2. Internal Control Intermediary Analysis

Driven by the wave of digital economy, the integration of business and finance has become an inevitable choice for enterprises to transform and upgrade. With the help of advanced digital technology, seamless integration of business and financial data has been achieved, and the efficiency of information sharing has been unprecedentedly improved. This integration has really made communication and collaboration between various departments in the enterprise much closer, even changing the way accounting policies are formulated and personnel management is carried out. When the concept of financial cooperation is deeply integrated into the corporate culture and business philosophy, the quality of internal control can skyrocket. Once business and finance are integrated, the internal environment of the enterprise is optimized, and the supervision and communication mechanisms become transparent and efficient. In this way, management and stakeholders can have a more comprehensive understanding of the business situation, and potential risks can be identified and evaluated in a timely manner. This change is significant, providing stakeholders with more powerful monitoring methods, preventing management from acting recklessly, and reducing high-risk decisions. The operational and financial risks of the enterprise have also been significantly reduced. Speaking of which, the integration of business and finance has five major advantages in improving the quality of internal control. the internal environment has been optimized, resulting in a healthier and more positive corporate atmosphere; The risk assessment capability has been enhanced, allowing enterprises to more accurately identify potential risks and respond more effectively; Control activities have been optimized, resulting in more standardized and effective business processes; The efficiency of information communication has improved, and the phenomenon of information asymmetry has disappeared; Internal supervision has been strengthened to ensure strict implementation of internal control systems. These improvements not only make the various elements of internal control more coordinated, but also make enterprise operations and resource allocation more efficient. The self-interest behavior of managers has also been constrained, and the quality of accounting information has also improved. By strictly

controlling business process costs, improving control environment, strengthening supervision, optimizing communication and control activities, and enhancing risk assessment capabilities, the integration of business and finance has further suppressed earnings management behavior. Management and stakeholders can make decisions based on real and accurate data, which further reduces the risk of the enterprise. The integration of business and finance in the context of the digital economy has significantly reduced operational and financial risks for enterprises by optimizing the internal control environment and improving the quality of internal control. This discovery not only highlights the core position of financial integration in risk management, but also emphasizes the role of internal control as a bridge between financial integration and enterprise risk management.

3.3. Variable Measurement and Definition

This article focuses on enterprise risk, mainly exploring it from two dimensions: operational risk and financial risk. Operational risk is measured by accounting revenue fluctuations, and profit volatility is reflected by calculating the rolling standard deviation of enterprise revenue indicators; Financial risk is evaluated using the modified Z-Score model, where the higher the Z-score, the lower the risk. The explanatory variable is the integration of business and finance, quantitatively measured through text analysis, and the degree of integration is determined by extracting keywords from the annual report. The mediating variables include the quality of accounting information and the quality of internal control. The former is evaluated using the modified Jones model to assess the degree of manipulation, while the latter is measured by selecting indicators from the DiBo database. In addition, other factors that may affect enterprise risk are also controlled, such as enterprise size, growth, board size, proportion of independent directors, dual role integration, management expense ratio, company size, and total asset turnover rate, while considering annual and industry characteristics to ensure comprehensive and accurate analysis. Through these variables, we will delve into the impact of financial integration on corporate risk.

4. Results and Discussion

4.1. Overview of Model Construction and Hypothesis Verification

In order to comprehensively understand the impact of business and financial integration on enterprise operations and financial risks, as well as the mediating role of accounting information quality and internal control quality, we have specially built a regression model to study. We have developed a benchmark regression model to examine whether financial integration has an impact on corporate risk and to what extent. In the model, operational risk and financial risk of the enterprise are dependent variables, while financial integration of the enterprise is the explanatory variable. We also considered other factors such as industry type and annual changes, and controlled them well. Through this model, we can roughly understand whether business and financial integration is good or bad for enterprise risk, and how significant the impact is. We have also developed an intermediary verification model specifically to verify the mediating role of accounting information quality and internal control quality between financial integration and corporate risk. We have separately examined the impact of financial integration on these two qualities, and how they play a role in the impact of financial integration on enterprise risk. We use stepwise regression analysis to delve deeper into the relationship between accounting information quality and internal control quality in financial integration and corporate risk. The purpose of this article is to comprehensively analyze the impact of financial integration on enterprise risk, especially the important roles played by accounting information quality and internal control quality, through the construction of these two

models. The construction and validation of these models provide strong support for our understanding of how financial integration affects enterprise risks. In the future, if enterprises want to reduce risks and improve operational efficiency, they can refer to our research results to better integrate business and finance.

4.2. Correlation Analysis of Enterprise Risk Financial Variables

This study constructed a large panel dataset (2013-2022) from authoritative financial databases and company annual reports, and obtained 26290 valid observations after screening listed non-financial companies. Continuous variables were subjected to Winsorization at the 1% level to improve data robustness, and empirical analysis was conducted in Stata16.0. This study decomposes enterprise operational risk into two dimensions: operational stability, measured by the 5-year rolling standard deviation of ROA adjusted by the industry; Financial health, quantified using an inverted international comprehensive risk score. The Innovative Management Collaboration Index (BFII) uses text analysis to transform management discussion keywords into standardized 0-2 scales to capture the depth of strategic implementation. The model design adopts a progressive approach, starting from benchmark regression, to test the impact of BFII on two types of risks, while controlling for company size, growth, and governance variables. Subsequently, an international framework examined the mediating role of financial reporting reliability and internal governance efficiency in risk transmission. Both models include annual and industry fixed effects to control for exogenous shocks. This design establishes a "collaborative risk management" chain and elucidates the risk transmission pathways through mediating variables, providing empirical insights into the quality of strategic implementation.

4.3. Comparative Analysis of Evaluation Effects

This study constructed a large-scale tracking dataset from 2013 to 2022, and ultimately established an empirical database containing 26290 valid observations by combining authoritative financial databases with company annual reports. In order to comprehensively grasp the data characteristics of each variable in empirical testing, systematic descriptive statistics were conducted on the core variables and control variables. The specific results are shown in Figure 1.

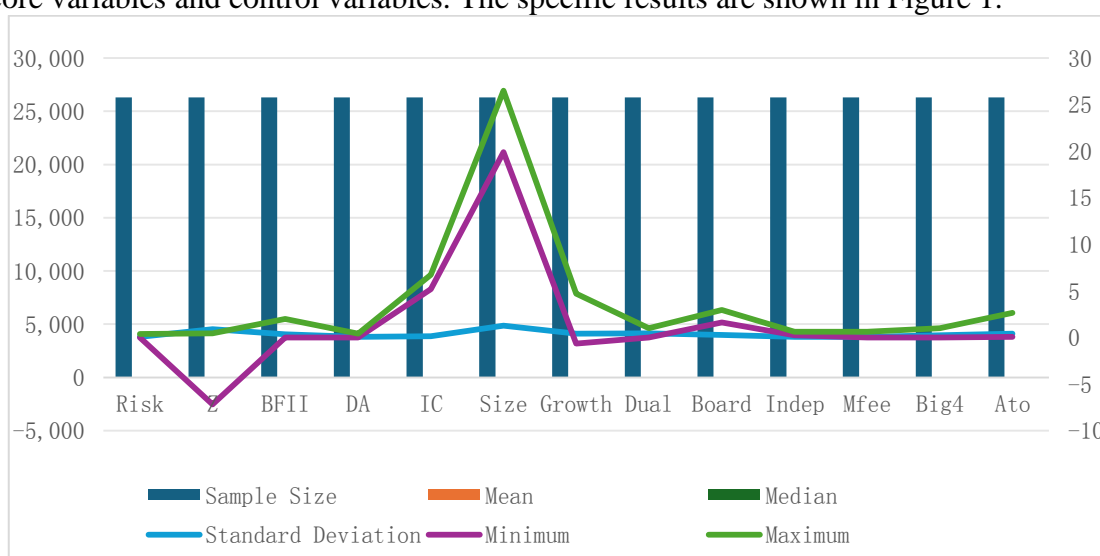


Figure 1. Descriptive statistical results of variables

The statistical results show that the average operating risk of the sample enterprises is 0.051, with significant differences between enterprises (0.002-0.39); The overall financial risk is relatively high (mean -1.924), with significant differences between enterprises (-7.185 to 0.454). The overall performance of internal control in enterprises is good, with an average of 6.463, but there are significant differences among enterprises in controlling variables such as size and growth. In order to further explore the impact of business finance integration on enterprise risk and internal control, this article first used Pearson correlation test to preliminarily analyze the relationship between various variables, and found that business finance integration was significantly negatively correlated with operational risk, significantly negatively correlated with accounting information quality, and significantly positively correlated with internal control. Although the correlation coefficient between business finance integration and financial risk is small and positive, further analysis is needed to verify it. The control variable's coefficient is low, suggesting no multicollinearity. A multiple regression model confirms that business-finance integration reduces risks. Accounting info and internal control mediate this risk reduction. Propensity score matching alleviated endogeneity, showing significant pre-match differences but not post-match. Average effect tests confirm a positive impact on corporate performance. As shown in table 1

Variable	Sample	Treated	Controls	Difference	S.E.	T-stat
Risk	Unmatched	.04001	.05106	-.01104	.00153	-7.18
	ATT	.04004	.04452	-.00447	.00139	-3.21
Z	Unmatched	-1.89688	-1.925260	.028370	0.02670	.1.06
	ATT	-1.89456	-1.81534	-0.07922	0.03068	-2.58

Table 1. Average Treatment Effect (ATT) test results

Empirical research shows that the integration of business and finance can significantly reduce operational and financial risks for enterprises. By matching sample regression, this relationship is statistically significant. After controlling for endogeneity issues, the conclusion remains robust. The lagged analysis shows that the impact of business finance integration has a lag effect. In addition, the quality of accounting information and internal control play an intermediary role in this process. In summary, the integration of business and finance is an effective strategy for reducing enterprise risks, providing new perspectives and theoretical support for enterprise risk management and practical applications.

5. Conclusion

In the era of big data, enterprises have found that integrating business and finance is crucial for reforming financial management systems, which can significantly reduce operational and financial risks. This study is based on theories such as agency delegation, information asymmetry, signal transmission, and internal control, combined with data from listed companies for in-depth analysis. The results show that financial integration of enterprises effectively reduces enterprise risks by improving the quality of accounting information and strengthening internal controls. Especially in technology intensive and high financing constrained enterprises, this inhibitory effect is more pronounced. In terms of countermeasures, enterprises should attach importance to business and financial integration, increase investment in digital technology, establish a comprehensive management system, optimize processes, and improve efficiency. Improve systems, cultivate talents, motivate departments. Governments should promote integration, raise awareness, improve regulations, provide support, disseminate knowledge, and establish support systems. Future research should explore measurement standards. Financial integration will enhance competitiveness, value creation, risk response, and support sustainable enterprise development.

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