

Research on the Impact of Digital Transformation on the Quality of Internal Control of Enterprises

Qingmin Sang*

School of Business, Liaocheng University, Liaocheng 252000, China

*Corresponding Author

Abstract

Whether digital transformation can improve the quality of internal control of enterprises, through which path to play a role, and whether there are differences between different enterprises, has become an important issue in accounting and financial management research. Based on the theory of information asymmetry, principal-agent theory, process reengineering theory and dynamic capability theory, this paper analyzes the theoretical logic of digital transformation affecting the quality of internal control. It is believed that digital transformation generally helps to improve the quality of internal control of enterprises, which is mainly reflected in three aspects: first, improving the standardization, transparency and traceability of internal control activities through information system construction; second, improve enterprise risk identification and early warning capabilities through data integration and process integration; third, improve the implementation effect of internal control by improving the decision-making efficiency of management and the coordination ability of departments. On this basis, the following suggestions are put forward: first, enterprises should promote the digital transformation and the construction of internal control system as a whole, and strengthen the top-level design and system coordination; the second is to improve the data governance and authority management mechanism to prevent the risk of control failure in the digital environment; the third is to strengthen the cultivation of compound accounting talents and promote the deep integration of finance, audit, business and information technology; fourth, the regulatory authorities should further improve the internal control evaluation and information disclosure rules under the digital background, and guide enterprises to achieve a substantial leap from 'information system' to 'digital strong governance'. The research in this paper is helpful to deepen the understanding of the economic consequences of digital transformation, and also provides a certain reference for enterprises to improve the effectiveness of internal control and achieve high-quality development.

Keywords

Digital transformation, internal control quality, corporate governance, risk management, accounting information.

1. Introduction

1.1. Research Background

With the rapid development of the new generation of information technology, the digital economy has become an important force to promote the high-quality development of China's economy. Cloud computing, big data, artificial intelligence, blockchain, Internet of Things and other technologies continue to penetrate into enterprise management activities. The digital transformation of enterprises is no longer limited to single software replacement or local business transformation, but gradually expands to strategic planning, organizational structure,

business processes, financial management, supply chain collaboration and risk control. Especially in the context of intensified market competition, enhanced external environmental uncertainty and increasing regulatory requirements, digital transformation has become an important way for enterprises to enhance their core competitiveness and governance capabilities.

Internal control is a key link in the corporate governance system. A scientific and effective internal control system can not only ensure the legal and compliant operation of business activities, but also prevent fraud risks, improve the quality of financial reports, and promote the rational allocation of resources. However, the traditional internal control system is mostly based on paper processes, hierarchical approval and decentralized systems. In the face of the real environment of increasing business complexity, rapid growth of data volume and rapid changes in business scenarios, its limitations are increasingly apparent. For example, the lag of information transmission, poor process connection, untimely supervision and feedback, and large man-made operation space will affect the effectiveness of internal control.

Digital transformation provides new possibilities for improving the quality of internal control. On the one hand, through the construction of ERP, financial sharing platform, intelligent audit system, budget management system and data platform, enterprises can realize the real-time collection and interaction of business, financial and management data, so as to enhance the automation of control activities and process tracking ability. On the other hand, digital transformation has also changed the risk form of enterprises. New data security risks, algorithm deviation risks, system authority management risks and platform dependence risks are constantly emerging, which puts forward higher requirements for internal control. Because of this, it is of great theoretical value and practical significance to study the impact of digital transformation on the quality of internal control.

1.2. Research Significance

From a theoretical perspective, the existing research on the economic consequences of digital transformation mostly focuses on corporate performance, innovation ability, financing constraints, total factor productivity, etc., and there is still room for further deepening the research on how digital transformation affects corporate governance, especially the quality of internal control. Internal control is not only the embodiment of the internal governance ability of the enterprise, but also an important intersection of financial accounting, audit supervision and risk management. Studying the relationship between digital transformation and internal control quality is helpful to enrich the research system of digital transformation governance effect.

From a practical point of view, many enterprises pay more attention to cost efficiency, market response and business innovation when promoting digital transformation, while relatively ignoring system construction and control coordination, resulting in the problem of "emphasizing system construction and neglecting governance reconstruction." By studying the influence mechanism of digital transformation on the quality of internal control, it can help enterprises to understand that digital construction is not a simple information technology upgrade, but a systematic project involving control process, organizational collaboration and risk management, which has a practical guiding role for enterprises to achieve standardized operation and steady development.

1.3. Research Content And Research Ideas

This paper focuses on the impact of digital transformation on the quality of internal control. First of all, sort out the relevant research results at home and abroad, and clarify the main points and shortcomings of the existing research; secondly, starting from the relevant theories, this paper analyzes the mechanism of digital transformation affecting the quality of internal control,

and puts forward the research hypothesis. Thirdly, the research design framework is constructed, and the research plan is explained from the aspects of variable setting, sample selection and model construction. Then, combined with theoretical analysis, the mechanism and heterogeneity of digital transformation to improve the quality of internal control are discussed. Finally, put forward policy recommendations for enterprises and regulatory levels. The research idea of this paper is as follows: taking digital transformation as the core explanatory variable and internal control quality as the explained variable, constructing the research framework on the basis of theoretical analysis, focusing on the logic of digital transformation to improve the quality of internal control through information integration, process optimization, risk early warning and supervision constraints, and putting forward corresponding conclusions and suggestions on this basis.

2. Literature Review

2.1. Research on Digital Transformation

Existing research generally believes that digital transformation is a process in which enterprises use digital technology to deeply transform resource allocation methods, business processes, organizational structures, and business models. Early research mostly started from information construction, and took ERP, e-commerce platform, management information system and so on as the main forms of digitization. With the continuous evolution of digital technology, scholars have gradually expanded their research perspectives to data-driven decision-making, platform ecological construction, intelligent manufacturing, industry-finance integration and organizational agility improvement.

From the perspective of research content, the economic consequences of digital transformation are mainly reflected in the following aspects: First, improve operational efficiency. Through data penetration and process automation, enterprises can reduce information search costs and transaction costs, and improve resource allocation efficiency. Second, enhance innovation ability. Digital technology helps enterprises to obtain market information, identify customer needs and promote knowledge sharing, thus promoting product and service innovation. Third, improve the financing environment. Enterprises with a higher degree of digitization usually have stronger information transparency and better governance, and are more likely to be recognized by the capital market. Fourth, promote organizational change. Digital transformation not only changes business processes, but also promotes organizational flattening, collaboration, and intelligent decision-making.

However, some studies have pointed out that digital transformation does not necessarily bring positive performance. If the enterprise lacks the corresponding governance mechanism, talent base and system supporting, the phenomenon of "high input and low output" may appear in the digital input, and even aggravate the internal friction and management failure of the organization. Therefore, the effectiveness of digital transformation depends largely on the internal governance structure and resource integration capabilities of enterprises.

2.2. Research on the Quality of Internal Control

The quality of internal control usually refers to the rationality of the design of the internal control system, the effectiveness of the implementation and the degree of realization of the overall control objectives. The existing research generally measures the quality of internal control from the perspectives of five elements of internal control, internal control audit opinions, internal control defect identification and internal control index. Studies have shown that high-quality internal control can help reduce the risk of financial fraud, improve the reliability of financial reporting, curb opportunistic behavior of management, improve investment efficiency and reduce financing costs.

Regarding the influencing factors of internal control quality, the existing research mainly starts from the following aspects: First, corporate governance factors, such as board independence, management incentives, and equity structure; second, external environmental factors, such as regulatory intensity, market competition and legal system environment; the third is the enterprise characteristic factors, such as enterprise scale, growth, profitability and property rights; the fourth is the basic factors of technology and management, such as the level of information system construction, financial sharing and internal audit ability.

In recent years, with the wide application of digital technology, some scholars have begun to pay attention to the new changes of internal control under the background of informatization and digitization. Some studies have pointed out that the application of information systems can improve the standardization and transparency of business processes, reduce human intervention, and enhance the timeliness and traceability of internal control. However, there are also studies that system control cannot completely replace system control and manual judgment. If the authority setting is unreasonable and the system logic design is flawed in the digital environment, it may lead to new control risks.

2.3. Research on the Relationship Between Digital Transformation And Internal Control

Research on the relationship between digital transformation and internal control quality, the existing results generally support the positive relationship between the two. The logic mainly includes: first, digital transformation improves the information environment of enterprises and reduces the information asymmetry between management and shareholders, business departments and financial departments; second, digital transformation promotes the standardization and automation of enterprise processes, reducing human error and fraud space; third, digital technology strengthens the ability of enterprise risk identification and early warning, and improves the forward-looking of control activities. Fourth, the digital platform provides a data base for internal audit and supervision and inspection, and improves the efficiency of supervision.

However, there are still some deficiencies in the current research. First of all, the explanation of the mechanism of action is not systematic enough. Some studies only discuss the impact from the single dimension of 'information level improvement', and lack of comprehensive analysis of multiple paths such as risk governance, organizational coordination and supervision constraints. Secondly, the research objects are mostly concentrated in listed companies, and there is insufficient attention to the differences between enterprises of different sizes, different property rights and different industries. Thirdly, there are relatively few discussions on the new risks of internal control that may be brought about by digital transformation, which is easy to cause over-optimistic judgments. Based on this, this paper intends to further analyze the multiple mechanisms of digital transformation affecting the quality of internal control on the basis of existing research, and discuss it from the perspective of heterogeneity.

3. Theoretical Basis And Research Hypothesis

3.1. Information Asymmetry Theory

The theory of information asymmetry holds that in modern enterprises, the information held by different stakeholders is different, which can easily lead to adverse selection and moral hazard. One of the important functions of internal control is to reduce information distortion and information lag by standardizing information recording, transmission and feedback mechanisms. Digital transformation forms a real-time, shared and traceable information environment by breaking through the data barriers between various business systems, which helps to alleviate the problem of information asymmetry within and outside the enterprise. The

financial department can obtain business data more timely, and the management can grasp the operating conditions more accurately, so as to improve the quality of control decision-making. Therefore, from the perspective of information asymmetry, digital transformation is conducive to improving the quality of internal control.

3.2. Principal-agent Theory

The separation of ownership and management rights is common in modern enterprises, which leads to the agency problem between shareholders and management, management and employees. The establishment of internal control system is essentially to restrain the behavior of agents and reduce agency costs. Digital transformation makes management behaviors and business activities more transparent and reduces the space for management to manipulate information and employees' illegal operations through the whole process, intelligent approval, real-time monitoring and authority management. At the same time, digital tools can enhance the review ability of supervision departments and improve the efficiency of supervision. It can be seen that digital transformation helps to alleviate agency problems, thereby improving the effectiveness of internal control implementation.

3.3. Process Reengineering Theory

The theory of process reengineering emphasizes the significant improvement of efficiency, quality and response speed by fundamentally redesigning the key processes of the enterprise. Traditional internal control is often embedded in decentralized, repetitive and multi-level processes, which is easy to form control redundancy and control blind spots. Digital transformation can promote enterprises to redesign business processes such as procurement, production, sales, settlement, budget and reimbursement, and realize node standardization, process transparency and control automation. Process reengineering not only improves the efficiency of business processing, but also makes control activities more embedded in business processes, thereby improving the quality of internal control.

3.4. Dynamic Capability Theory

Dynamic capability theory emphasizes the ability of enterprises to integrate, reconstruct and update resources in a rapidly changing environment. Digital transformation is not only a kind of technology application, but also reflects the adaptability and reconstruction ability of enterprises at the level of organization, system and resources. The quality of internal control is not a static result, but the dynamic ability of enterprises to continuously identify risks, optimize processes and adjust mechanisms. Digital transformation improves the ability of enterprise data processing and environmental perception, making it easier to find internal control defects and correct them in time, which is conducive to enhancing the dynamic adaptability of enterprise internal control.

3.5. Research Hypothesis

Based on the above theoretical analysis, this paper proposes the following hypothesis:

Hypothesis 1: The higher the level of digital transformation of enterprises, the higher the quality of internal control.

The core logic of this hypothesis is that digital transformation can improve the effectiveness of internal control by improving information transparency, optimizing business processes, strengthening risk warning and enhancing supervision capabilities.

Further, the impact of digital transformation on the quality of internal control may be achieved through the following paths:

Hypothesis 2: Digital transformation improves the quality of internal control by improving the efficiency of information transmission.

Hypothesis 3: Digital transformation improves the quality of internal control by enhancing risk identification and early warning capabilities.

Hypothesis 4: Digital transformation improves the quality of internal control by improving the level of business financial synergy.

In addition, different enterprises have differences in resource endowment, governance ability and institutional environment, and the governance effect of digital transformation may not be consistent. Generally speaking, large enterprises have richer resources and better system foundation, and it is easier to transform digital advantages into internal control effectiveness; due to stricter governance requirements and more standardized institutional system, state-owned enterprises may also show more significant improvement. Therefore, this paper further proposes:

Hypothesis 5: Compared with small and medium-sized enterprises, digital transformation has a more significant effect on the improvement of internal control quality of large enterprises.

Hypothesis 6: Compared with non-state-owned enterprises, digital transformation has a more significant effect on the improvement of internal control quality of state-owned enterprises.

4. Research Design

4.1. Sample Selection And Data Sources

If empirical research is carried out, China's A-share listed companies can be selected as research samples. Because the information disclosure of listed companies is more standardized, and the digital transformation, internal control evaluation report, financial data and governance variables are relatively easy to obtain, it has a good research foundation. The research period can be set from 2018 to 2024 to cover the important stage of the continuous advancement of digital transformation of Chinese enterprises. The sample data can be processed as follows: excluding financial listed companies; excluding ST and * ST companies; eliminate missing samples of key variables; in order to reduce the influence of extreme values, the continuous variables are tailed up and down by 1 %.

Data related to digital transformation can be obtained through text analysis of annual reports of listed companies. For example, the word frequency of keywords such as 'big data', 'artificial intelligence', 'cloud computing', 'blockchain', 'digital platform', 'intelligent manufacturing' and 'financial sharing' in the statistical annual report is used to construct digital transformation indicators. It can also be combined with digital intangible assets investment, software investment or related patent data for comprehensive measurement. The quality of internal control can be measured by the Dibo internal control index or the disclosure of internal control deficiencies. Control variables can include enterprise size, asset-liability ratio, profitability, growth, enterprise age, board characteristics, ownership concentration and so on.

4.2. Variable Definition

(1) Interpreted variable: internal control quality (ICQ)

The internal control index can be used to measure, the higher the value, the higher the quality of internal control. If the index cannot be obtained, alternative indicators such as the number of internal control defects and the type of internal control audit opinions can also be used.

(2) Explanatory variables: digital transformation level (DIG)

It can be measured by annual report text mining, digital related input, number of digital patents or comprehensive scoring. It is generally believed that the richer the digital related expressions and the higher the related investment, the higher the degree of digital transformation of enterprises.

(3) Control variables

Including enterprise size (Size), asset-liability ratio (Lev), return on total assets (Roa), operating income growth rate (Growth), enterprise listing age (Age), ownership concentration (Top1), board size (Board), independent director ratio (Indep) and so on.

(4) Mechanism variables

In order to further test the path of action, indicators such as information transparency, risk-taking level, business financial synergy, and internal audit quality can be selected as intermediary variables for expansion analysis.

4.3. Model Construction

In order to test the impact of digital transformation on the quality of internal control, the following benchmark model can be constructed:

$$ICQ_{it} = \alpha_0 + \alpha_1 DIG_{it} + \sum Controls_{it} + Year + Industry + \varepsilon_{it}$$

Among them, ICQ_{it} Indicates the internal control quality of enterprise i in t period, DIG_{it} It represents the level of enterprise digital transformation, Controls is a set of control variables, Year and Industry represent annual and industry fixed effects, respectively.

If α_1 Significantly positive, it shows that digital transformation helps to improve the quality of internal control of enterprises, thus supporting Hypothesis 1.

In order to test the impact of heterogeneity, we can further group regression according to enterprise scale, property right nature or industry category, or introduce interaction items to test the difference of digital transformation effect.

4.4. Description of Research Methods

In the specific research methods, descriptive statistics, correlation analysis and multiple regression analysis can be used. If it is necessary to further enhance the robustness of the conclusions, the instrumental variable method, the propensity score matching method, the double difference method or the substitution variable method can be used to test the robustness. For the accounting master's thesis, if the data acquisition ability is limited, it can also be analyzed on the basis of the theoretical research framework combined with the case study. For example, a manufacturing listed company with rapid digital transformation is selected as the case object to analyze the change of its internal control system. This 'theoretical analysis + case verification' approach is also highly feasible.

5. Mechanism Analysis of Digital Transformation Affecting Internal Control Quality

5.1. Information Integration And Transmission Efficiency Improvement Mechanism

The internal control of traditional enterprises is easily troubled by the problem of information fragmentation. Purchasing, warehousing, sales, finance, auditing and other departments often use independent systems or even manual ledgers, resulting in inconsistent data calibers, lagging information updates, and high inter-departmental communication costs, which in turn affects the effectiveness of internal control implementation. Digital transformation integrates business flow, capital flow and information flow into the same system through the construction of a unified information platform to achieve multi-sector data sharing. This information integration mechanism can significantly improve the quality of internal control.

First of all, the digital system helps to improve the integrity and accuracy of information records. Through standardized data entry rules and system logic control, enterprises reduce manual entry errors and information omissions. Secondly, real-time data sharing improves the timeliness of internal control. Financial personnel no longer rely solely on the final report to understand the operating conditions, but can grasp the procurement, inventory, sales and refund information in real time, so as to find abnormalities earlier. Thirdly, increased transparency of information will also enhance the sense of responsibility of departments and make control activities more binding. Therefore, digital transformation has laid a foundation for improving the quality of internal control by improving the information environment.

5.2. Risk Identification And Early Warning Capability Enhancement Mechanism

One of the important objectives of internal control is to reasonably ensure the realization of business objectives and control major risks. The traditional control mode relies more on manual experience and post-examination. In the face of complex business environment, there are often problems such as lagging risk identification, insufficient early warning and untimely response. Digital transformation enhances enterprise risk management capabilities through big data analysis, real-time monitoring, and anomaly identification capabilities.

For example, in fund management, the system can automatically identify abnormal payment, repeated reimbursement, budget overruns and authority overstep approval; in supply chain management, the system can identify accounts receivable bad debt risk and supply disruption risk based on historical transactions and customer behavior; at the financial reporting level, intelligent analysis tools can assist in identifying abnormal accounting treatment and data bias. This shows that the digital transformation has shifted internal control from traditional static control and post-event control to dynamic monitoring, process control and early warning control, which has greatly improved the effectiveness of control activities.

5.3. Business Process Optimization And Control Embedding Mechanism

Digital transformation not only means system upgrading, but more importantly, it promotes enterprise business process optimization. The effectiveness of internal control depends largely on whether control activities can be embedded in key business processes. If the control rules are out of line with the business process, there will often be a phenomenon of 'system on paper, execution in words'. Through process reengineering, digital transformation enables control nodes to automatically embed key links such as procurement application, contract approval, expense reimbursement, inventory management, sales settlement and budget control.

Taking the expense reimbursement process as an example, there may be problems such as lax document review, unclear approval chain and insufficient post-review in the traditional model. After the introduction of the digital reimbursement system, the invoice verification, budget occupancy, authority matching, automatic approval flow and whole process trace can be realized, so as to improve the standardization and traceability of control activities. For example, in the procurement process, the digital system can realize the linkage control of supplier access audit, price comparison, contract filing and payment, and reduce the manual operation space. Therefore, business process optimization and control embedding is an important path for digital transformation to improve the quality of internal control.

5.4. Supervision and Restraint And Responsibility Implementation Mechanism

Whether internal control can play a role depends not only on the system design, but also on the supervision and inspection and the implementation of responsibilities. Traditional supervision methods usually rely on manual spot checks and regular audits, with limited coverage and long feedback cycles, making it difficult to detect problems in time. Digital transformation provides new tool support for enterprise supervision mechanism.

On the one hand, the system traces improve the feasibility of accountability. Each business operation is recorded, and the operator, approver and execution path can be clearly identified, which significantly reduces the operating space for violations. On the other hand, internal audit and discipline inspection and supervision departments can carry out continuous audit and online monitoring based on system data to improve the pertinence and efficiency of supervision. At the same time, digital Kanban and visual analysis tools enable management to grasp key control indicators and risk status faster and promote the implementation of responsibilities. As a result, digital transformation not only changes the way of control execution, but also reshapes the internal supervision pattern of enterprises.

6. Heterogeneity Analysis of the Impact of Digital Transformation on Internal Control Quality

6.1. The Difference of Enterprise Scale

There are significant differences in resource endowments, management complexity and system construction capabilities among enterprises of different sizes. Large enterprises usually have stronger financial strength, more mature management system and better talent pool, can withstand the higher input costs in the early stage of digital transformation, and achieve scale effect through system integration. In addition, large enterprises have a long business chain, many organizational levels, and relatively more difficult internal control. Therefore, the process optimization and supervision improvement brought about by digital transformation are more obvious.

In contrast, although the organizational structure of small and medium-sized enterprises is relatively simple, their digital construction is often limited by capital, talent and management foundation, which is prone to the problem of "buying system and light application," and it is difficult to effectively transform digital technology into control ability. Therefore, digital transformation usually plays a more significant role in improving the internal control quality of large enterprises.

6.2. Differences in the Nature of Property Rights

State-owned enterprises usually bear stricter compliance responsibilities and regulatory requirements, their internal control system is relatively standardized, and the system implementation foundation is better. Digital transformation is easier to connect with budget management, capital control, audit supervision and performance evaluation in state-owned enterprises, so as to play a synergistic role. At the same time, state-owned enterprises often have a stronger institutional driving force in promoting financial sharing, treasury construction, centralized management and control, so digital transformation is more likely to improve the quality of internal control.

Non-state-owned enterprises are more market-sensitive and flexible, and the speed of digital transformation may be faster, but some enterprises have problems such as insufficient institutional construction and irregular control processes. If enterprises overemphasize efficiency and ignore internal control support, the control improvement effect of digital transformation may be weakened. Therefore, digital transformation may play a stronger role in improving the quality of internal control of state-owned enterprises.

6.3. Industry Differences

The application scenarios and governance needs of digital transformation in different industries are different, and its impact on the quality of internal control is also different. Manufacturing enterprises usually involve many complex links such as procurement, production, inventory, logistics and sales. The internal control process is long and there are

many nodes. Digital transformation can significantly improve control efficiency through intelligent manufacturing, supply chain collaboration and cost accounting optimization. For retail, Internet, and platform-based enterprises, the digital foundation is strong, but their business models are updated quickly and the amount of data is large. Internal control faces data security and platform governance challenges. For traditional service industries and labor-intensive industries, it may be more reflected in financial sharing, reimbursement management and human resource control.

Therefore, the impact of digital transformation on the quality of internal control is not simple and consistent, but should be analyzed in combination with the industry business model and risk characteristics.

7. New Problems Faced By Enterprise Internal Control Under The Background of Digital Transformation

7.1. Excessive System Dependence Leads To Insufficient Control Resilience

Digital transformation has improved the level of control automation, but it may also make enterprises overly dependent on information systems. Once the system fails, the data interface is abnormal or the platform encounters a network attack, the original control process may fail in a short time, and even cause business interruption and management confusion. In the process of transformation, some enterprises attach importance to system construction and light emergency mechanism, ignoring alternative control and emergency control arrangements, resulting in insufficient internal control resilience.

7.2. Data Security And Privacy Protection Risks Rise

The digital transformation has led to a rapid increase in enterprise data assets. Financial data, customer information, supplier information and business secrets are highly dependent on system storage and transmission. If the data governance mechanism is not perfect, there may be problems such as data leakage, tampering, and unauthorized access. Especially in multi-system integration, cloud platform deployment and cross-organizational collaboration scenarios, data security issues are more complex. Once an information security incident occurs, it will not only affect business activities, but also weaken the credibility of internal control.

7.3. Unreasonable Allocation of Authority Leads To New Fraud Risks

In the digital environment, authority management has become one of the core contents of internal control. If the system permissions are set unreasonable, it may lead to the failure of the separation of responsibilities of key positions. For example, a position with entry, review and modify permissions at the same time, or temporary authorization for a long time without recycling, may form a new fraud space. Compared with the traditional paper approval, the authority problem in the digital system is more hidden and technical, and it is often difficult to find it in time without continuous monitoring.

7.4. The Shortage of Compound Talents Restricts The Control And Upgrading

Digital transformation requires financial, audit and internal control personnel not only to be familiar with institutional rules, but also to have certain data analysis capabilities, system application capabilities and cross-sectoral collaboration capabilities. However, in reality, some enterprises' accounting personnel are still accustomed to the traditional accounting model, lack of mastery of digital tools, and it is difficult to effectively participate in system design and control optimization. At the same time, although information technology personnel are familiar with system logic, they may lack internal control awareness and understanding of financial rules. The shortage of compound talents has become an important bottleneck restricting the construction of digital internal control.

8. Research Conclusions And Countermeasures

8.1. Research Conclusion

This paper analyzes the impact of digital transformation on the quality of internal control. Through theoretical combing and mechanism discussion, the following conclusions can be drawn:

First, digital transformation generally helps to improve the quality of internal control. Digital transformation can significantly improve the effectiveness and execution of internal control by improving the information environment, optimizing business processes, strengthening risk identification and early warning mechanisms, and enhancing supervision and restraint capabilities.

Second, there are multiple paths for digital transformation to affect the quality of internal control. It not only improves the efficiency of information transmission, but also realizes the transformation from post-control to process control and from static inspection to dynamic monitoring by embedding control activities into business processes.

Third, there are differences in the governance effects of digital transformation. In large enterprises, state-owned enterprises and industries with high process complexity, the role of digital transformation in improving the quality of internal control is more obvious; in enterprises with weak resource base and insufficient system support, the effect may be limited.

Fourth, digital transformation is not without risks. Problems such as system dependence, data security, rights management and talent shortage may lead to new control failure risks. Therefore, only by promoting digital transformation in coordination with system construction, organizational change and talent training can the quality of internal control be truly improved.

8.2. Suggestions for Enterprises

(1) The overall design of digital transformation and internal control construction

Enterprises should regard digital transformation as the reconstruction of governance system, not just the introduction of technical tools. When promoting the construction of ERP, financial sharing, data platform, intelligent audit and other systems, we should synchronously sort out the control process, division of responsibilities and approval rules, ensure that the digital system matches the internal control system, and avoid the problem of 'the system is online, but the control rules are not updated synchronously'.

(2) Strengthen data governance and rights management

Enterprises should establish a sound data classification and classification management system, and clarify the norms of data collection, storage, transmission and use; at the same time, the system authority configuration is optimized, the principle of incompatible post separation is strictly implemented, and the high-risk authority is regularly reviewed and dynamically monitored. For temporary authorization, cross-post authorization and system administrator authority, a special supervision mechanism should be established to prevent new fraud risks.

(3) Promoting financial integration and process reengineering

In order to truly improve the quality of internal control in digital transformation, the key is to realize the integration of business, finance and management. Enterprises should carry out process reengineering around the core processes of procurement, production, sales, capital, budget, contract, etc., embed control activities into key nodes, realize rule advancement, risk preposition and process retention, and improve the efficiency of internal control implementation.

(4) Strengthening the cultivation of compound talents

Enterprises should speed up the training of compound talents who not only understand financial accounting and internal control, but also understand data analysis and information

system. For financial personnel and auditors, training in digital tools, system logic and data governance should be strengthened; for technical personnel, financial rules and internal control awareness education should be strengthened. Through cross-departmental collaboration and job rotation training, the overall digital governance ability of the organization is improved.

8.3. Suggestions for Regulatory Authorities

(1) Improve the internal control evaluation rules under the digital background

With the deepening of enterprise digital transformation, the traditional internal control evaluation framework needs to be expanded appropriately. The regulatory authorities can add data governance, authority management, system security, algorithm transparency and other content to the internal control evaluation guidelines to promote enterprises to more comprehensively identify control risks in the digital environment.

(2) Guide enterprises to strengthen digital information disclosure

Regulators can moderately improve the information disclosure requirements related to enterprise digital transformation and governance capabilities, guide enterprises to disclose digital construction investment, system application scope, data governance mechanism and control improvement effectiveness, and improve the market's recognition of enterprise digital governance capabilities.

(3) Strengthen demonstration promotion and experience exchange

We can promote the excellent practice of collaborative construction of digital transformation and internal control by publishing typical cases, organizing special training and carrying out experience exchange, so as to help small and medium-sized enterprises and traditional industry enterprises reduce transformation costs and improve governance level.

8.4. Research Deficiencies And Prospects

This paper mainly analyzes the influence mechanism of digital transformation on the quality of internal control of enterprises from the theoretical level. Although a relatively complete research framework has been constructed, there are still some shortcomings. First, this paper has not yet carried out empirical tests based on specific samples, and subsequent research hypotheses can be further verified based on the data of listed companies. Secondly, the measurement methods of digital transformation are more diverse, and different index calibers may lead to differences in research conclusions. In the future, we can try to build a more comprehensive comprehensive index system. Thirdly, the discussion of intermediary mechanism and moderating effect in this paper is still based on theoretical deduction. In the future, more in-depth analysis can be carried out from the perspectives of information transparency, internal audit quality and organizational synergy.

In general, digital transformation provides new opportunities and challenges for the improvement of internal control quality. Future research can further combine industry cases, policy background and technological progress to continuously deepen the understanding of the effect of digital governance.

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