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The Impact of Digital Transformation on Internal Control Quality: A Study Based on Five Components of Internal Control

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Abstract: With the rapid development of globalized digital technology, digital transformation has been a topical issue in business sectors. Organizations are facing dynamic adjustments in corporate strategy objectives and disruptive innovation in operation management in the process of digital transformation, which is bound to bring a significant impact on the construction of corporate internal control. This paper focuses on the theoretical analysis of the effect mechanism of digital transformation on corporate internal control quality from the five components of internal control, which are creating synergies of the control environment, the automation of risk assessment, the intelligence of control activities, the transparency of monitoring activities, as well as the sharing of information and the consistency of communication. And it has been demonstrated in detail that digital transformation has a positive impact on the improvement of corporate internal control quality. The research results provide new insights for deepening the digital transformation of enterprises and improving the internal control system.

1. Introduction

As emerging digital technologies constantly dominate our economic landscape and reshape the business environment, digital transformation become a worldwide topical issue in business sectors, enterprise's internal processes, product creation and customer relationship have been changed [1]. Organizations are facing dynamic adjustments in corporate strategy objectives and disruptive innovation in operation management to stay competitive in the digital context. Furthermore, the process of digital transformation is not a one-time [2], instead, it is continuous that needs frequent adjustments of its processes, products and services to external needs [3]. These adjustments are bound to bring a significant impact on corporate internal control and force it to have evolutionary changes in all elements and processes. Therefore, a topic worth investigating is whether digital transformation can affect the construction and implementation of corporate internal control quality.

Internal control refers to a process that is designed to reduce risks and help firms ensure the reliability of financial statements and compliance with laws and regulations. The establishment of a high-quality internal control system are benefit to the improvement of corporate transparency as well as the marketability of firms' equities [4]. Previous studies have demonstrated that digital transformation might guide centralized or decentralized governance mechanisms [5]. Besides, there is a complementary relationship between digitization and corporate governance mechanisms [6]. The content of governance mechanism is a part of the construction of internal control, nonetheless, little attention has been paid to the effect mechanism of digital transformation on corporate internal control.

Internal control consists of five integrated components, including control environment, risk assessment, control activities, information and communication, and monitoring activities. The five components of an internal control system represent the basis for high-quality corporate governance [7]. This paper focuses on the theoretical analysis of the effects of digital transformation on internal control quality, attempting to investigate the effect mechanism of digital transformation on corporate internal control quality from the five components of internal control, as well as extend the literature on digital transformation and internal control quality.

2. Literature Review

2.1. The Definitions and Economic Value of Digital Transformation

The existing literature on digital transformation has produced a shared definition of the term digital transformation. Some studies have conducted a similar systematic literature review and found that almost all topics related to digital transformation use the following elements to describe the definition of digital transformation: technological, organizational, and social [8]. Besides, other research believed the nature of that digital transformation is multidisciplinary, involving changes in strategy, organization, technology, supply chains, and marketing [9,10]. Based on this, the definition of digital transformation can be more clearly recognized. Digital transformation can be defined as a transform about a firm enact clear digital strategy and employ new digital technologies to develop new digital business model that helps to create more value for the firm and influences all aspects of customers' life.

Digital transformation has direct or indirect effects on firm outcomes and performance. For example, studies found that compared to direct competitors, digital transformation have positive influences on firm performance measured by a series of financial index including profitability, customer retention, return on investment, and so on [11]. Similarly, the firm has lower costs, better operating efficiency, and better innovation success leading to better performance with digital transformation supported [12,13]. Besides, some scholars also suggest that digital transformation will drive digital innovation [14,15], as well as constitute competitive advantages [16,17].

Whereas some scholars have questioned the economic value of digital transformation. According to Guo [18], firm's profitability does not be guaranteed because digital transformation may incur costs from management rising and integration. Besides, Li [19] examined the curvilinear relationships between digital transformation and sustainable performance based on economic and environmental dimensions, the result shows that digital transformation can accelerate the improvement of economic performance, but it presents an inverse U-shaped relationship between digital transformation and environmental performance. Therefore, actors need to consider all things about the relevant activities and their expected outcomes in practices before they start to implement a digital transformation, either positive or negative. This might provide great insight for them to implement digital transformation consistently.

2.2. The Determinants of Internal Control Quality

In 2013, the COSO Committee revised the internal control framework and clarified the requirements for determining what constitutes effective internal control. Internal control refers to a process designed to provide reasonable assurance regarding the relevant achievement of objectives, including effectiveness and efficiency of operations, reliability of financial reporting, and adherence to laws and regulations. Based on the definition of internal control, the effectiveness of corporate internal control is about providing reasonable assurance regarding the achievement of an entity's objectives.

Many scholars discussed the determinants and impact of internal control quality from different perspectives on the theory and empirical research, involving managers' individual characteristics, corporate governance mechanisms, and the development of information technology (IT). Oradi et al. [20] found that if a firm's CEO has less financial or accounting expertise and relevant background are more likely to have internal control weaknesses. Other individual characteristics such as tenure, committee experience, education background [21], the CEO's rural origin background [22], and gender traits between female employees and male employees [23] may affect one's risk preference and financial behavior related to internal control quality. In terms of corporate governance mechanisms, the quality of the audit committee is positively associated with internal control quality [24]. Meanwhile, the relationship between internal auditing and external auditing are complements rather than substitutes, and the demand for external auditing services is based on changes in the extent of internal auditing [25]. In order to better monitor manager's actions as well as internal control quality, requiring firms to disclose CEO-board ties in their annual report [26], introducing media attention [27] to create an effective collaborative supervision mechanism. From the perspective of technology development, Kucherenko et al. [28] argued that the improvement of information technologies can form a new accounting information environment, and move forward, a high informatization foundation allows the integration of digital transformation into internal operations efficiently [29].

In view of the literature review, several studies have tried to explore the impact of digital transformation on different business areas, however, studies on the intersection between digital transformation and internal control quality are still scattered, as well as lack a unified perspective and integrated framework. We intend to fill the gap with the current research.

3. The Mechanism of Digital Transformation Affects Internal Control Quality

In the process of digital transformation, the development of digital technology and the implantation of digital concepts will promote the transformation of enterprise operation and management mode, and also promote systematic changes in corporate internal control, which will have a far-reaching impact on the quality of corporate internal control. From the perspective of five components of internal control, this paper analyzes the mechanism of enterprise digital transformation on internal control quality. The effects of digital transformation on internal control quality are mainly reflected in the following aspects.

3.1. Analysis of Control Environment Perspective

The internal control environment is the cornerstone for carrying out internal control across the organization, it is designed and operated to influence the overall way the company operates.

After entering the era of the digital economy, better to survive these challenges of new entrants in the market, the company changes its strategy [30], along with the internal control environments components such as organizational structure, organizational culture, human resources policy, and so on. Firm's digital transformation has led to a shift in their organizational structure from traditional hierarchies to flat platforms, due to the previous bureaucratic organizational model has gradually shown the problem that it cannot adapt to rapid external market changes as well as the internal management needs of employees' autonomy and spontaneity on the era of the digital economy. This effect happens through the following mechanisms. Digital transformation dramatically undermines information acquisition costs for everyone in organizations. Specifically, cheaper information access has an empowering effect[31], not only increasing the information available to decision-makers but also enabling agents to handle problems independently [32], meanwhile, the cost of transmitting information within the enterprise has also dropped significantly. Actors at all levels can be widely involved in the operation process of the enterprise through real-time interactive information benefits in synergies. It can also pressure managers to proactively share information with shareholders and boards so as to discipline the behavior of managers through reduce information asymmetry.

The digital transformation itself continuously creates new content, which brings about the demand for new tasks, and leads to obsoletes some old ones [33]. Many tasks are gradually completed more efficiently by digital devices, so as to traditional skills or positions are no longer needed. Enterprise is driving a shift toward a learning organization guided by a digital transformation strategy, better to react to changing market conditions. A learning organization supports individual learning, it creates the necessary freedom for self-change, special in helping the evaluation of one's own actions compared to the objectives, meanwhile, the organization benefits from individual learning results when experiences and skills are shared, discussed, and jointly exerted. Otherwise, digital transformation enacts the development of a data-driven culture, which can shift managers' attention from intuition to data when they take decisions, and the human resources policy also has more concerns about the technical skills training of employees in terms of big data-specific competencies. These changes will optimize the internal control environment, so as to improve the quality of internal control.

3.2. Analysis of Risk Assessment Perspective

Risk assessment involves a dynamic and iterative process for identifying and assessing risks to the achievement of objectives. The implementation of traditional risk management lack of efficiency in the real environment, due to the risk assessment being mostly reliant on experience and mathematical analysis, it favors subjective result based on existing knowledge and intuition to decision-making, overall, the whole process is still a manual undertaking [34]. There are some challenges in the above process, including real-time information capture and analysis, multidisciplinary knowledge and experience in management, as well as synergies of control environment [35].

Compared with traditional information technology, digital technology including automatic collection, real-time monitoring, and intelligent analysis provide strong support for accurately identifying risk factors associated with business activities. The specific manifestation mechanism is as follows. First, the amount of data stored in the cloud on external servers are usually shared free and dynamically growing [36], accessing to information and data is broader and cheaper by using digital technology. Second, a large database of human knowledge and experience is established based on massive data, information and data can be flexible and accurately extracted anytime. Third, taking the measures of identification, quantization as well as analysis of the possible risks automatically with digital technology support, further, rating the risks, so that strategies for decision-makers that can be used to reduce the chances of risk occurrence are developed and implemented. In sum, digital technology applies in risk assessment that can improve the efficiency and effect of risk review, so as to improve the quality of internal control.

3.3. Analysis of Control Activities Perspective

Control activities are the actions that help ensure that management's directives to be carried out with policies and procedures established. Digital transformation significantly improves the efficiency of task assignments for employees. For example, the decision-making on the allocation of tasks is more reliant on computer systems, based on the digital HRM systems which accurately match employees' personal information and task needs. Responsibility is easily clear when decisions are made so that individuals are able to take responsibility for their actions, as well as better to trace back when task objects are not being implemented. Meanwhile, staff can be fully authorized without space or geographical restrictions better to complete tasks through the diverse digital technology of individual identification such as voice recognition, face recognition, and electronic seal.

Operations are standardized and processes are digitized with digital technology support. For example, organizational barriers can be broken down through a financial shared service center established, cross-organizational process integration of end-to-end to undertake the transaction processing work is realized, and economies of scale of integration operations are achieved. Meanwhile, the company's internal approval and authorization matrix is also integrated into the shared platform, so that the process of each business activity flows from review to approval automatically, and the efficiency of financial operations is also improved. As above mentioned, the intelligence of activity control can be realized so as to internal control quality can be ensured.

3.4. Analysis of Information and Communication Perspective

Modern society is an information society, where information flows to support the achievement of predetermined goals and communication facilitates the sharing and acquisition of necessary information. Digital transformation can improve the promptness as well as the effectiveness of information and communication. On the one hand, in the past, many interdependent tasks were inevitably separated due to distant geography, with the application of digital technology can drop the costs of activities by reducing communication costs across the geographical of the organization. Video and telecommuting conferencing become normal. Digital transformation removes the barriers of space and time, this allows companies to share information better. On the other hand, with the help of digital technology, the transparency of enterprise operation information on the up and downstream of the business chain can be increased, and the channels of external information resources use can be expanded. For example, due to the information symmetry between enterprises and banks, as well as the development of financial technology (such as WeChat and Alipay), the channel of enterprise external financing is multiple, which is beneficial to the improvement of the enterprise level of debt financing.

In summary, digital transformation promotes the sharing of information and the consistency of communication, which is conducive to the improvement of internal control quality.

3.5. Analysis of Monitoring Activities Perspective

Monitoring activities are conducive to enterprise internal in check wrong and remedy the disadvantages of the internal control system. Due to the limited perception of managers, the deviations in comprehension of employees, and changes in the current situation, the actual operation of internal controls can be problematic. Digital transformation has played a crucial role in monitoring activites. Since business processes are digitalization, the internal monitoring programs can be integrated into all links of process, making real-time tracking and dynamic adjustment as well as comprehensive monitoring, so as to realize intelligent identification and repair the internal control deficiencies promptly.

The board of directors will be responsible for the corporate internal control system of examination and approval, while the manager accountable for the daily operation. The principal-agent problems between shareholders and managers are rooted in asymmetric information, so it is crucial that the role of audits. Digital economy makes trading activities online, which can provide a number of unbroken information and data flow for internal or external to undertake audit tasks. Auditors can evaluate all data of the audited firm and make the result more accurate by employing digital tools such as the analysis of big data rather than the sampling method [37], so as to improve the quality of internal audits. It is worth mentioning that the applications of algorithms and data models can complete most of the daily decision-making, which can make managers fail in the intervening action, so as to better restrain individual behavior. Based on the above statement, strengthening the internal control mechanism can improve the quality of internal control.

4. Conclusion

This paper inspects enterprise digital transformation of the economic value from the perspective of internal control quality. To conclude, we believe that relevant studies of digital transformation will be strongly applicable and multidisciplinary in the future given the recent developments in digital technologies. This paper has provided a systematic discussion on the impact mechanism of digital transformation on corporate internal control quality based on the five components of internal control. Whereas there are some limitations: based on the theory of this paper, further empirical analysis can be carried out to better verify its internal influence mechanism. In addition, this paper mainly expounds on the positive impact of digital transformation on corporate internal control quality while lacking discussion on the negative impact. This can be adequately supplemented in future studies.

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